# Technical Bulletin No. 19


## Oregon State Highway Department
SALEM, OREGON

R. H. BALDOCK, State Highway Engineer
C. B. McCULLOUGH, Assistant State Highway Engineer


# Manual of Instructions for Construction Department Employees


Prepared under the supervision of

H. G. SMITH, Construction Engineer

by

H. W. LIBBY, Chief Locating Engineer
RAY WEBBER, Assistant Construction Engineer
S. P. JONES, Engineer Designer



Published by

OREGON STATE HIGHWAY COMMISSION
SALEM

T. H. BANFIELD, *Chairman*
ARTHUR W. SCHAUPP, Commissioner MERLE R. CHESSMAN, Commissioner

1946



OREGON STATE
HIGHWAY DEPARTMENT
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STATE PRINTING DEPT.

*To All Employees of the Construction Department*
*of the Oregon State Highway Commission:*

The object of this manual is to acquaint new employees with the requirements of the Department as well as to afford a concise and ready reference for old employees to matters covered by circular letters or instructions on specific situations.

A further object of this manual is to standardize the work to the end that all employees will handle the work in a uniform manner and know what is expected of them. While some of these instructions may seem elementary and unnecessary, they are as a rule based upon points where mistakes and differences of methods and practice have been most frequent in the past. It is not intended, however, to cover in this manual every possible contingency that may arise in the field or in the office work, but to state the points on which strict uniformity is necessary and to indicate methods and acquaint the field with the forms which will produce the desired results. While in the employ of the Highway Commission, one is expected to accomplish two things: First, secure well executed work; Second, secure the cooperation and interest of the people in the community in which the work is situated. One must bear in mind that his actions will govern the opinion the local people will form not only of the piece of work in hand but of the conduct of the Department as a whole. Employees should always give courteous attention and consideration to all inquiries for information and endeavor to furnish any data which they may have or refer the question to their superior.

It might be suggested that the employee is not expected to burden his memory with the detail of these entire instructions, but should familiarize himself with the general provisions and consult them frequently for specific instructions concerning any particular work at hand.

It is realized that various conditions may arise in the field work which will require different methods. These instructions are not intended as a hard and fast rule, but as a guide to secure uniformity and a completeness of records, together with the best results at a minimum cost. Employees will be judged by this standard. Any suggestion of improvement in the method of work or form of record will be appreciated at any time.

It is to be clearly understood that the instructions contained in this manual are not a part of any contract, and in case of a conflict, the contract specifications shall govern.

Very truly yours,

R. H. BALDOCK,
State Highway Engineer

By
H. G. SMITH,
Construction Engineer

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## SECTION 1. GENERAL INSTRUCTIONS TO ALL EMPLOYEES

*Article*

1. Map of State Highway Systems.
2. List of Primary State Highways.
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22. Purchase of Books and Scientific Instruments.
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24. Garnishments and Assignments of Wages.

STATE OF OREGON
Showing
SYSTEM of STATE HIGHWAYS
NOTE: The Highway Index Numbers as shown on this map should not be confused with Highway Route Numbers which appear on Traveled Road Maps and Road Signs.
LEGEND
30
Primary Highways
330
Secondary Highways
PACIFIC OCEAN
CALIFORNIA
NEVADA
IDAHO
CLATSOP
COLUMBIA
TILLAMOOK
WASHINGTON
MULTNOMAH
HOOD RIVER
CLACKAMAS
YAMHILL
POLK
MARION
LINCOLN
BENTON
LINN
LANE
DOUGLAS
COOS
CURRY
JOSEPHINE
JACKSON
KLAMATH
LAKE
DESCHUTES
JEFFERSON
CROOK
WASCO
SHERMAN
GILLIAM
MORROW
UMATILLA
WHEELER
GRANT
UNION
WALLOWA
BAKER
HARNEY
MALHEUR
ASTORIA
SEASIDE
ST. HELENS
PORTLAND
VANCOUVER
HILLSBORO
FOREST GROVE
GRESHAM
OREGON CITY
TILLAMOOK
McMINNVILLE
SALEM
DALLAS
SILVERTON
NEWPORT
TOLEDO
CORVALLIS
ALBANY
EUGENE
COTTAGE GROVE
COOS BAY
COQUILLE
ROSEBURG
GRANTS PASS
MEDFORD
ASHLAND
GOLD BEACH
KLAMATH FALLS
LAKEVIEW
BEND
PRINEVILLE
MADRAS
THE DALLES
HOOD RIVER
MORO
CONDON
FOSSIL
HEPPNER
PENDLETON
WALLA WALLA
LA GRANDE
ENTERPRISE
BAKER
CANYON CITY
BURNS
VALE
HUNTINGTON
COLUMBIA RIVER
SNAKE RIVER

May, 1945

## Article 2—Primary State Highways

| State Highway No. | Highway Name. |
|---|---|
| 1W | Pacific Highway West (Jc. Union Ave. to Junction City, via McMinnville and Corvallis) |
| 1E | Pacific Highway East (Washington State Line to Junction City, via Milwaukie, Salem and Albany) |
| 1 | Pacific Highway (Junction City to California State Line) |
| 2 | Columbia River Highway |
| 3 | Oswego |
| 4 | The Dalles-California |
| 5 | John Day |
| 6 | Old Oregon Trail |
| 7 | Central Oregon |
| 8 | Oregon-Washington |
| 9 | Oregon Coast |
| 10 | Wallowa Lake |
| 11 | Enterprise-Lewiston |
| 12 | Baker-Homestead |
| 13 | Baker-Unity |
| 14 | Crooked River |
| 15 | McKenzie |
| 16 | Santiam |
| 17 | McKenzie-Bend |
| 18 | Willamette |
| 19 | Fremont |
| 20 | Klamath Falls-Lakeview |
| 21 | Green Springs |
| 22 | Crater Lake |
| 23 | Dairy-Bonanza |
| 24 | Burns-Crane |
| 25 | Redwood |
| 26 | Mt. Hood |
| 27 | Alsea |
| 28 | Pendleton-John Day |
| 29 | Tualatin Valley |
| 30 | Salem-Dallas |
| 31 | Albany-Corvallis |
| 32 | Three Rivers |
| 33 | Corvallis-Newport |
| 34 | Siuslaw |
| 35 | Coos Bay-Roseburg |
| 36 | Pendleton-Cold Springs |
| 37 | Wilson River |
| 38 | Oregon Caves |
| 39 | Salmon River |
| 40 | Beaverton-Hillsdale |
| 41 | Ochoco |
| 42 | Sherman |
| 43 | Monmouth-Independence |
| 44 | Wapinitia |
| 45 | Umpqua |
| 46 | Necanicum |
| 47 | Wolf Creek |
| 48 | John Day-Burns |
| 49 | Lakeview-Burns |
| 50 | Klamath Falls-Malin |
| 51 | West Portland-Hubbard |
| 52 | Heppner |
| 53 | Warm Springs |
| 54 | Boardman-Stanfield |
| 55 | Halfway |

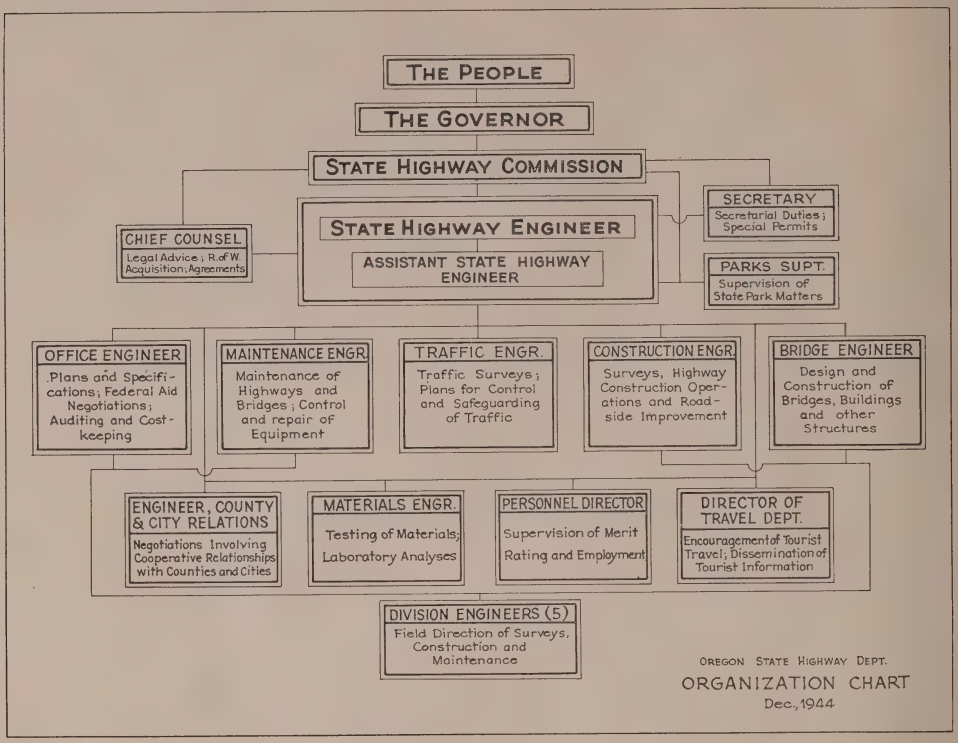
## Article 3—Secondary State Highways

| County | Highway No. | Name |
|---|---|---|
| Baker | 340 | Medical Springs |
| | 410 | Sumpter Valley |
| | 411 | Haines-Anthony |
| | 413 | Halfway-Cornucopia |
| | 414 | Pine Creek |
| Benton | 180 | Eddyville-Blodgett |
| | 191 | Kings Valley |
| | 200 | Territorial |
| | 201 | Alsea-Deadwood |
| | 202 | Tampico-Lewisville |
| | 210 | Corvallis-Eastside |
| Clackamas | 141 | Beaverton-Aurora |
| | 160 | Cascade |
| | 161 | Woodburn-Sandy |
| | 170 | Canby-Marquam |
| Clatsop | 102 | Nehalem |
| | 103 | Fishhawk Falls |
| Columbia | 102 | Nehalem |
| | 110 | Mist-Clatskanie |
| Coos | 240 | Cape Arago |
| | 241 | Coos River |
| | 242 | Powers |
| | 243 | Empire-Coos Bay |
| Crook | 360 | Madras-Prineville |
| | 370 | O'Neil |
| | 371 | Powell Butte |
| | 380 | Paulina |
| Curry | 250 | Cape Blanco |
| | 251 | Port Orford |
| Deschutes | 370 | O'Neil |
| | 371 | Powell Butte |
| | 372 | Century Drive |
| | 373 | Cline Falls |
| | 374 | Tumalo-Deschutes |
| | 375 | Redmond-Bend |
| Douglas | 200 | Territorial |
| | 230 | Tiller-Trail |
| | 231 | Elkton-Sutherlin |
| | 232 | Crater Lake-North |
| | 233 | West Diamond Lake |
| | 425 | East Diamond Lake |
| Gilliam | 300 | Wasco-Heppner |
| Grant | 401 | Beech Creek |
| | 402 | Kimberly-Long Creek |
| Harney | 440 | Frenchglen |
| | 441 | Diamond Valley |
| | 442 | Rome-Princeton |
| Hood River | 281 | Hood River |
| | 282 | Odell |
| Jackson | 230 | Tiller-Trail |
| | 233 | West Diamond Lake |
| | 270 | Little Butte |
| | 271 | Sam's Valley |
| | 272 | Medford-Provolt |
| | 273 | Siskiyou |
| Jefferson | 360 | Madras-Prineville |
| Josephine | 260 | Rogue River Loop |
| | 261 | Williams |
| Klamath | 420 | Midland |
| | 421 | Klamath Lake |
| | 422 | Chiloquin |
| | 423 | Lower Klamath |
| | 424 | Sand Creek |
| | 425 | East Diamond Lake |
| | 426 | Hatfield |
| | 427 | Modoc Point |
| Lake | 431 | Warner |
| Lane | 200 | Territorial |
| | 201 | Alsea-Deadwood |
| | 220 | Eugene-Richardson |
| | 221 | Fox Hollow |
| | 222 | Springfield-Creswell |
| | 223 | Junction City-Eugene |
| | 224 | W. 7th Street-W. 11th Street |
| Lincoln | 180 | Eddyville-Blodgett |
| | 181 | Siletz |
| Linn | 162 | North Santiam |
| | 210 | Corvallis-East Side |
| | 211 | Albany-Lyons |
| | 212 | Halsey-Sweet Home |
| | 213 | Mehama-Mill City |
| | 214 | Albany Airport |
| Malheur | 442 | Rome-Princeton |
| | 450 | Nyssa-Adrian |
| | 451 | Vale-West |
| | 452 | Adrian-Parma |
| | 453 | Adrian-Arena Valley |
| | 454 | Adrian-Caldwell |
| | 455 | Homedale Spur |
| | 456 | I. O. N. |
| | 458 | Jordan Valley |
| Marion | 140 | Hillsboro-Silverton |
| | 141 | Beaverton-Aurora |
| | 160 | Cascade |
| | 161 | Woodburn-Sandy |
| | 162 | North Santiam |
| | 163 | Silver Creek Falls |
| | 213 | Mehama-Mill City |
| Morrow | 300 | Wasco-Heppner |
| | 320 | Lexington-Echo |
| | 321 | Heppner-Spray |

## Article 3—Secondary State Highways—Continued

| County | Highway No. | Name |
|---|---|---|
| Multnomah | 120 | Swift |
| | 122 | Vancouver Avenue |
| | 123 | Northeast Portland |
| | 124 | Sun Dial |
| | 160 | Cascade |
| Polk | 150 | Salem-Dayton |
| | 191 | Kings Valley |
| | 192 | Dallas-Coast |
| | 193 | Independence |
| | 194 | Monmouth |
| Sherman | 290 | Sherars Bridge |
| | 300 | Wasco-Heppner |
| | 301 | Fulton Canyon-Wasco |
| Tillamook | 130 | Little Nestucca |
| | 131 | Netarts |
| Umatilla | 320 | Lexington-Echo |
| | 330 | Weston-Elgin |
| | 332 | Sunnyside-Umapine |
| | 333 | Hermiston |
| | 334 | Athena-Holdman |
| | 335 | Havana-Helix |
| | 336 | Airport |
| | 337 | Stanfield-Pendleton |
| | 338 | Ordnance Depot |
| Union | 330 | Weston-Elgin |
| | 340 | Medical Springs |
| | 341 | Starkey |
| | 342 | Cove |
| Wallowa | 350 | Little Sheep Creek |
| | 351 | Joseph-Wallowa Lake |
| Wasco | 290 | Sherars Bridge |
| | 291 | Shaniko-Fossil |
| Washington | 102 | Nehalem |
| | 140 | Hillsboro-Silverton |
| | 141 | Beaverton-Aurora |
| | 142 | Farmington |
| | 143 | Scholls |
| Wheeler | 291 | Shaniko-Fossil |
| | 321 | Heppner-Spray |
| | 390 | Service Creek-Mitchell |
| Yamhill | 140 | Hillsboro-Silverton |
| | 150 | Salem-Dayton |
| | 151 | Yamhill-Newberg |
| | 152 | Three Mile Lane |
| | 153 | Bellevue-Hopewell |
| | 154 | Lafayette |
| | 155 | Amity-Dayton |
| | 156 | McMinnville |

## Article 4—Organization Chart




### Article 5—Construction Engineer

(a) Is the staff assistant to the State Highway Engineer and supervises all matters pertaining to location, construction and roadside improvement of all state highways.

(b) Assistants to the Construction Engineer:

1. Chief Locating Engineer, who supervises location in rural areas, Lambert's system of projection and the establishment of level lines.
2. Assistant Chief Locating Engineer, who supervises location in urban areas and the design of traffic interchanges.
3. Assistant Construction Engineer, who supervises grading and paving construction, with particular reference to soil studies, underground drainage and slide control.
4. Construction Office Engineer, approves all minor construction accounts, and handles all office work of the Construction Engineer.

### Article 6—Division Engineer

The Division Engineer is an executive officer of the State Highway Department for the portion of the state to which he has been assigned. His duties are to coordinate and supervise the various activities pertaining to the location, construction and maintenance of the state highways in his division.

He reports directly to the Construction Engineer on all matters pertaining to road location and construction; to the Bridge Engineer on all matters pertaining to bridge construction; and to the Maintenance Engineer on all matters pertaining to maintenance of state highways.

In addition to submitting routine reports and programs, he will make such other recommendations from time to time, with respect to the work in progress, or to proposed projects, as he may deem expedient or consider necessary.

The Division Engineer shall make a preliminary draft of the specifications for each project about to be contracted. These should be completely prepared in a manner customary to the Department; such a draft being accompanied by a report giving the reason for any change in the standard provisions and for any unusual provisions which it is desired to have incorporated therein. This draft of the specifications shall be submitted through the Construction Engineer to the State Highway Office Engineer for final drafting.

### Article 7—Resident Engineer

Under the direction of the Division Engineer a Resident Engineer shall have immediate charge of location or construction, including one or more projects.

He will be held responsible for the activities and efficiency of his subordinates and for the satisfactory prosecution of the work under his supervision.

He will be held responsible for the accuracy of all notes and records. He shall see that all required reports are promptly furnished to Division and Headquarters offices.

Each Resident Engineer shall keep a diary in which matters of importance regarding his work shall be entered daily.

The closest cooperation is desired with the engineers and other employees in the field; and suggestions or criticism in regard to faulty design, or as to methods of procedure, will be welcomed and given attentive consideration. In offering suggestions to the Construction Department, the Resident Engineer or other employee should refer them in written form to the Division Engineer who will pass upon them and transmit them to Department Headquarters.

The Resident Engineer's relations with the public, contractors and local officials should be courteous, firm, business-like and governed by common sense. He should on all occasions keep in mind that he is a representative of the State Highway Department, engaged in the supervision of public work, and should, therefore, carefully avoid taking sides in local disputes or controversies, as such action on his part might be interpreted as being the attitude of the Department and tend to create ill will toward it. All statements of plans or policies are issued by the State Highway Commission or the executive officers at division or general headquarters. Field engineers are instructed to tactfully refer inquiries of this sort to the division headquarters. All matters of major importance shall be referred by the divisional headquarters to the general headquarters.

In dealing with people along the highway, the Resident Engineer must endeavor to maintain friendly relations. Frequently requests will be made to which he will be unable to comply, without committing the Department to some action which might be contrary to its policy and might not be approved. In such cases field engineers are to take pains not to offend people making improper requests, but courteously refer them to his superior officer. It is well that the Resident Engineer should become acquainted with owners along the highway and find out their problems and plans in relation to the contemplated improvement. A friendly discussion and understanding in such cases will often avoid later ill feeling and possible expensive litigation.

### Article 8—Efficiency

In any organization as large and diverse in its activities as is the State Highway Department, every opportunity should be taken to reduce expenses without impairing efficiency. Long distance telephone should not be used when letter mail will serve the purpose. Daily mail should be concentrated in one envelope when submitted to the same office. Electric lights should be turned off when not in use. Tools and apparatus of all kinds must be kept clean, properly serviced and adjusted and should not be discarded as long as they remain reasonably serviceable.

It is essential that motorized equipment be stored, when not in use, where it will be protected against the weather and theft. Arrangements should be made for storage at reasonable rates.

The day's work should always be planned so as to avoid all possible duplication of effort and to eliminate lost motion.

To attempt to do a certain job without sufficient force always results in inefficiency and increased costs, but to keep a larger force on the job than is really necessary is still more inefficient and costly. When a job reaches the point where a smaller number of men can be used without impairing efficiency, the surplus men should be transferred to other work or laid off. (See Section 4, Article 4, Re: Transfer and Release of Employees.)

The man on the ground who is in close contact with the work is frequently able to make valuable suggestions to his immediate superior

as to economies that can be effected and improvements that can be made in methods, equipment, etc., and these suggestions are always welcome.

### Article 9—Office Quarters

The practice of combining the office and living quarters, that is, both being in the same room or house, is not to be tolerated. Requests for office quarters must be approved by the Division Engineer.

### Article 10—Report Address to Headquarters

The Resident Engineer assigned to take charge of a project shall, as soon as he has established his new headquarters, report to his Division Engineer his office location, post office, telephone or telegraph address; also the location of the nearest express and freight office.

He should leave his name and address at the telephone, telegraph, post office, freight and express offices, and be sure that they understand where he can be reached. When a resident engineer moves from one project to another he should leave his forwarding address with the local post office.

### Article 11—Correspondence

Resident Engineers are to take up all matters of importance with their Division Engineer, who in turn will bring the matter to the attention of the Construction Engineer, if necessary.

All correspondence, telegrams, freight and express packages for the general office shall be addressed to the head of the particular department in each case, with a copy of the correspondence, telegrams, etc., to the State Highway Engineer, and copies to the heads of all other departments affected.

To facilitate filing, each letter should cover but one subject or refer to one section or project only.

Copies of all correspondence, reports, payrolls, expense accounts, invoices, etc., should be retained by the employee for his own records.

All outside correspondence pertaining to the work of the Engineering Department must pass over the desk of the State Highway Engineer or the Assistant State Highway Engineer, and go out over their personal signatures. This rule pertains to correspondence with the Public Roads Administration, with governmental and state agencies, with railroad companies and corporations and, in fact, to all correspondence except inter-departmental correspondence and such other routine matters as may be specifically delegated to the various department heads. The only correspondence which is exempt from the above ruling will be that between the staff officers or department heads and their subordinates, or contractors working under their immediate supervision.

Copies of instructions written by the Resident Engineer to the contractor shall be sent to the Division Engineer.

### Article 12—Telephone and Telegraph

Request for telephone installation shall be made through the Division Engineer to the Construction Engineer.

The long distance telephone should be used only in cases of extreme urgency where the saving in time over letter mail is of sufficient importance to the State to fully warrant the expense of the call. Every effort should be made to avoid situations requiring long distance calls by anticipating the need for the communication far enough in advance to make the use of the letter mail practicable. In cases where letter mail cannot be made to serve the purpose, the use of the telegraph should be considered as telegrams are usually cheaper than telephone calls and often will accomplish the result quite as well. Attention should be given also to making telephone conversations as brief as possible, and to avoiding extension of conversations into discussions of nonessential matters.

### Article 13—Employee to Leave an Itinerary List

Employees who are required to travel shall leave at their headquarters an itinerary list showing dates, and if possible the names of the hotels at which stops will be made.

### Article 14—Political Activities of Employees

In view of the non-partisan nature of the State Highway Department and the necessity of administering its functions on a strictly non-political basis in the interest of the state as a whole and to secure the greatest efficiency, active participation in political affairs, by employees of the Department, will not be permitted.

### Article 15—Employees to Refrain from Use of Alcoholic Drinks

(a) There shall be no drinking of alcoholic liquor of any kind during working hours.

(b) There shall be no drinking of alcoholic liquor at any time, the effects of which are apparent or detectable during working hours.

(c) There shall be no drunkenness and no public display of intemperance or excessive drinking.

(d) No employee shall, at any time or for any cause, conduct himself in a manner unbecoming a gentleman or in a manner which will reflect discredit on the State Highway Department.

A violation of any of the foregoing rules will be sufficient cause for immediate dismissal.

Those employees who are subject to call to duty at any hour are cautioned particularly against involuntary violation of rule (b).

### Article 16—Employees to Use Protection Signs on Roadways

Employees shall at all times protect themselves while working on traveled roadways with standard signs placed in such a way as to give the desired warning to the traveling public, without being dangerous to travel.

NOTE—See under "Signs", Section 13, Article 57.

### Article 17—Accidents Involving State Equipment

The Truck Insurance Exchange of Los Angeles, California, will insure all state-owned vehicles for Bodily Injury and Property Damage. This company handles all adjustments direct and maintains two offices in Oregon as follows:

*Portland Branch Office*—L. P. Holcomb, Manager, 1001 S. W. 10th Avenue, Telephone BRoadway 1414 (24-hour service).

*Eugene Office*—James N. Tomlin, Adjuster, 69 W. Broadway, Telephone: Eugene 1609. Night phone: Eugene 5013 or Eugene 2443.

The Truck Insurance Exchange requests that they be immediately notified by telephone (collect) whenever there is Personal Injury, death or substantial property damage resulting from an accident involving or appearing to involve any State Highway equipment.

It will be necessary to furnish written reports through the regular channels for all traffic accidents using the Truck Insurance Exchange report form, T 224. In reporting accidents which have been reported by telephone to the insurance company, note on the report form the time and date of the telephone report and the name of the party to whom report was made. The report form should be filled in completely, should indicate the department owning the equipment involved and should be signed by the operator of the vehicle. Six copies of this report are required. Mail four to the Legal Department, one to the Maintenance Engineer and one to the Division Engineer.

The Truck Insurance Exchange also furnish a cardboard "Preliminary Accident Report" form T 36, a copy of which is to be carried in each vehicle. This report should be completed fully by the person operating the vehicle at the time of the accident and retained as a personal record of the accident.

The Oregon Motor Vehicle Laws require that the driver of any vehicle involved in an accident resulting in personal injury, death or property damage, shall within 24 hours forward a complete report of such accident to the Sheriff of the County or the Chief of Police of the City in which the accident occurs. This report should be prepared in duplicate on a form furnished by the Secretary of State's office, the original going to the Sheriff or the Chief of Police, the duplicate to F. B. Crandall, Traffic Engineer, Salem.

The Truck Insurance Exchange "Report of Accident" form T 224 and the Department of State "Traffic Accident Report" form OD 32 will be carried in stock at our storeroom and will be available upon requisition.

### Article 18—Travel Expense

Employees are entitled to receive compensation for expense incurred under the following conditions:

a. Expenses incurred in traveling to a new assignment. When the assignment is completed, and the employee is not reassigned, he will be entitled to expenses incurred in traveling back to the point where he was first assigned.

b. Expenses incurred while traveling on State business within the state, and on special assignments of less than ten days' duration away from established headquarters will be allowed, upon approval of the Division Engineer.

c. Except in the cases of those employees whose duties require continuous or very frequent travel, each trip for which expense allowance is to be claimed must be authorized *in advance* by the department official under whose direct supervision the employee is engaged.

d. When an employee is transferred from one headquarters to another, or from headquarters to a specific location, he will be allowed expenses in his new location until such a time as he has established temporary or permanent headquarters, or for a period *not to exceed ten days.*

The above paragraph is not to be interpreted to mean that every employee who is transferred to a new assignment will be

allowed a full ten-day period of expenses. The ten-day period is the maximum time for which expenses will be allowed. Expenses will not be allowed for a longer period than that over which they were actually incurred or beyond the time when the employee has permanently established himself.

e. Travel expenses for out-of-state travel must have advance approval, in writing, by the State Highway Engineer.

f. Use of private automobiles in the conduct of State business is to be discouraged. However, in the event of absolute necessity and upon written authority of the State Highway Engineer, an allowance of not to exceed 4 cents per mile is permissible.

In transporting employees from one survey or construction job to another, use shall be made of state-owned equipment insofar as possible. In order to provide room in the equipment for the personnel, the engineering supplies, etc., may be shipped by express or freight. Personal effects of employees shall not be transported by means of state-owned equipment.

In cases where employees use their own cars in traveling from one job to another, stage or railroad fare will not be allowed if there is ample room in state-owned equipment.

In transferring employees from one job to another, use the shortest and most direct route and see that expenses are not allowed for periods which exceed a reasonable length of time.

The allowance for meals is limited to actual cost with maximums as follows:

| | *In Portland* | *Elsewhere Than In Portland* |
|---|---|---|
| Maximum total for 3 meals in one day | $3.00 | $2.50 |
| Maximum total for 2 meals in one day: | | |
| Breakfast and lunch | 1.50 | 1.25 |
| Lunch and dinner | 2.35 | 2.00 |
| Maximum total for 1 meal in one day: | | |
| Breakfast | .65 | .50 |
| Lunch | .85 | .75 |
| Dinner | 1.50 | 1.25 |

Claims for breakfast taken on the day of departure from the headquarters location will not be allowed.

The allowance for lodging is limited to actual cost with the maximum of $2.50 per day in all places except Salem and Eugene, where the maximum shall be $2.75 per day, and in the following towns where the maximum will be $3.00 per day: Portland, Astoria, Baker, Bend, Burns, Corvallis, Florence, Georhart, Gold Beach, Hood River, Klamath Falls, La Grande, North Bend, Medford, Pendleton, Prineville, Tillamook, and Walla Walla, Washington.

Claims for lodging expense will not be allowed when the place of lodging is within 25 miles of the headquarters location from which the employee works.

The foregoing figures are a maximum; employees are cautioned that reimbursement can only be made for the actual expense incurred. In every instance the actual amount for each individual meal and for each lodging must be shown as expended and not shown at fictitious prices to total the maximum allowance.

Expense account form No. A-23 is to be filled out for each request for reimbursement of expenses incurred. Submit form A-23, in triplicate, to the Division Office within 30 days of the date the expense was incurred. Receipts shall be attached to the original copy of form A-23 for all items except the following:

a. Railroad, air line or stage fares, where fares are available in published tariff schedules.
b. Car ferry fares, bridge tolls or road tolls.
c. Meals.
d. Any other item, the cost of which does not exceed $1.00.

Particular attention is called to the fact that receipts are required for all charges for *lodging* (even though less than $1.00), and for *taxi fares and hotel bus* fares exceeding $1.00.

Federal taxes on transportation, telephone calls and other items are not reimbursable. Employees should avoid payment of such taxes by issuing tax exemption certificates (Form A-201) to the seller. Duplicate copies of the certificates should be attached to the expense account as evidence that the charge made is exclusive of tax.

In preparing expense accounts, the employee is asked to list, as costs for taxable items, the costs exclusive of tax, and to then make indication of the fact that the cost is exclusive of tax, either by attaching a duplicate copy of the tax exemption certificate issued for it, or by writing after the item the words, "exclusive of tax." Unless exclusion of the tax is indicated in this manner, it will be necessary for the Accounting Division to assume that the cost of the tax is included, and to subtract from the item the amount of the tax.

When the duplicate copy of a tax exemption certificate, signed by the vendor, is submitted with an expense account, it will serve as a receipt for the disbursement to which it applies, and

no other receipt for that disbursement need be submitted.

Tax exemption certificate blanks (Form A-201) may be requisitioned from the Salem storeroom in the same manner as other standard forms.

Indicate clearly in spaces provided whether transportation is by rail, stage or private car. Items of meals and lodgings should be shown opposite each location at which the charge was incurred, using a single space for each location. Expenses for one month are not restricted to one sheet of this form. The total of meals and lodging, car storage, transportation and miscellaneous items must be shown in the summary. This expense account form shall be approved and signed by the Resident Engineer or other person in charge and by the Division Engineer.

See Section 16, Article 30 for expense accounts amounting to more than $50.00.

### TRANSPORTATION OF EMPLOYEE'S HOUSEHOLD EFFECTS

When an employee, who has established himself and his family in a home at or near his headquarters location, is transferred by the Department to a new headquarters location at which he will be retained for several months, it will be in order for the Division Engineer or Department Head to request payment by the Department of the expense of transporting the employee's household effects from the one location to the other. If such request is approved by the State Highway Engineer or Assistant State Highway Engineer, and the requirements stated below are fully conformed with, the cost of transporting the household effects will be paid by the Department.

When payment of transportation expense by the Department is to be requested, shipment of the goods shall be made by railway or by whichever one of the following classes of truck transportation is found to be the cheaper in the particular case:

1. Licensed "Anywhere for hire" truck.
2. Licensed "Fixed termini" truck.

If the hauling is done by truck, the truck must be properly licensed as a public carrier.

The bill for the transportation should be made against the Oregon State Highway Commission for direct payment by the Department, and should be transmitted to the Accounting Division by the Division Engineer or Department Head with a letter describing the circumstances, giving his recommendation and giving comparative cost information when alternate means of truck transportation are available.

The expense of transporting household effects should not be paid by the employee with the expectation of receiving reimbursement as an expense account item. Payment will not be approved when the transfer of the employee involved is made for the convenience of the employee more particularly than the convenience of the Department.

Bills for the transportation of household effects are to be paid by the Accounting Division only when payment is approved by the appropriate Staff Engineer and the State Highway Engineer or Assistant State Highway Engineer.

### Article 19—Regular Accounts to be Paid Through Salem Office

The Salem office prefers that all regular accounts be paid through the Accounting Division instead of the Resident Engineer paying each and including same on his expense account.

### Article 20—Anthropological or Geological Discoveries

Notify Professor L. S. Cressman, Curator of Anthropology of the University of Oregon at Eugene of any discoveries made of an anthropological (pertaining to man) or geological nature. If a discovery of any amount is made, rearrange your plan of working or stop construction operations in the vicinity of the discovery in order that it not be disturbed. Archaeological investigations depend in a great measure upon the examination of the fossils or artifacts before they have been moved.

Any discoveries of an anthropological or geological nature upon the right of way or upon state property, becomes the property of the State and not the property of the person or persons making the discovery.

### Article 21—Remove Broken Glass and Dangerous Obstructions from Roadway

All employees are instructed to remove broken glass from the pavement.

### Article 22—Purchase of Books and Scientific Instruments to be Approved

All requests for scientific instruments and technical books which are to be department owned shall be made through the Division Engineer to the Assistant State Highway Engineer.

### Article 23—Membership in Organizations

The Highway Commission does not give consideration in the employment, retention or dismissal of its employees to their membership in political parties, fraternal orders, their religious affiliations or union membership. It does not discriminate among its employees because of their membership or non-membership in such associations. The Department Executives, as in the past, will hire, discharge and promote on the basis of merit and merit alone without dictation from any group.

### Article 24—Garnishments and Assignments of Wages

All garnishments or assignments of wages must be forwarded *immediately* to the Salem office for action, with a notation thereon of the date and the hour of service, signed by the person upon whom service is made.

In the event that during the interim between the service of the garnishment or filing of the assignment and the receipt of the papers by the Salem office, a check which would be affected has been sent out by the Accounting Division, the same shall not be delivered to the payee but shall be returned to the Pay Roll Supervisor immediately, with a letter of explanation.

Time checks are not to be issued any employee who has a garnishment filed against his wages.

DEPARTMENT OF STATE
Salem, Oregon

# TRAFFIC ACCIDENT REPORT

(Not open to public inspection)

DO NOT WRITE IN THIS SPACE

No. _____

F _____ NF _____ PD _____

Inc. Let. _____

To F.R.D. _____

Post D.R. _____ Inv. _____

## Location of Accident

Accident Occurred in County of Marion City of Salem

If outside city limits _____ miles ☐ North ☐ East ☐ South ☐ West } Of _____ (Town, community)

Accident Occurred on Commercial St (Name or number of street or highway)

Check and complete one line

☒ At intersection with Wilson St (Name or number of street or highway)

or

☐ If not at intersection _____ feet ☐ North ☐ East ☐ South ☐ West } Of _____ Name nearest intersecting street or highway, house number, milepost bridge, railroad crossing, culvert, or other identifying landmark.

Date of accident _____, 19__ Day of the week _____

Hour of the day — _____ A. M. _____ P. M.

Date accident report filed _____

## Type

**Accident Involved Motor Vehicle and—**

1. ☒ One other car
2. ☐ Two or more other cars
3. ☐ Pedestrian
4. ☐ Railroad train
5. ☐ Horse-drawn vehicle
6. ☐ Bicycle
7. ☐ Motorcycle
8. ☐ Animal
9. ☐ Streetcar or trolley coach
X. ☐ Fixed object*
R. ☐ Non-collision*

## Your Car

Driven by John Doe Address 123 Third St, Salem Age 38 ☒ Male ☐ Female

Occupation Civil Engineer Driving Experience 20 years Driver's License SR188330-Ore (State and number) Estimated damage to your vehicle $ 130.00

Year and Make of Vehicle 1938 Ford Type of Vehicle Pass. Car (Passenger car, truck, pickup, bus, etc.) Vehicle License No. E3456 State of Ore. P. U. C. No. _____

Owner Oregon State Highway Commission (Name) Salem, Ore. (Address)

Vehicle was going North (East, north, parked, etc.) on Commercial (Street or highway name or number) Estimated speed 20 (Miles per hour) Distance danger of accident first noticed 50 (Feet) Distance vehicle traveled after impact None (Feet)

Was vehicle being used for commercial purposes? _____

## Other Car

Driven by Paul O. Roe Address 745 Forth St Salem

Age 42 ☒ Male ☐ Female Driver's License One-AR176943 (State and number) Year and Make of Vehicle 1940 Dodge Type of Vehicle Pass. car (Passenger car, truck, pickup, bus, etc.)

Vehicle License No. 365-954 State of Ore. Vehicle was going East (East, north, parked, etc.) on Wilson (Street or highway name or number) Estimated Speed 10 (Miles per hour)

If other vehicle was involved, describe under "Remarks".

| Names and Addresses of Persons Injured or Killed | Age | Sex | Driver | Passenger | Pedestrian | Injured Slightly | Injured Severely | Killed |
|---|---|---|---|---|---|---|---|---|
| 1. | | | | | | | | |
| 2. None | | | | | | | | |
| 3. | | | | | | | | |

IF MORE SPACE IS NEEDED CONTINUE UNDER "REMARKS"

**IMPORTANT:** If you had an automobile liability policy at time of accident immediately notify your company to furnish certificate (Form S R 21) to Department of Financial Responsibility, Salem, Oregon.

CHECK WITH AN X ALL ITEMS THAT APPLY

### WEATHER CONDITIONS

1. ☒ Clear
2. ☐ Cloudy
3. ☐ Rain
4. ☐ Sleet
5. ☐ Fog
6. ☐ Snowing
7. ☐ Dust
8. ☐ Smoke

### LIGHT CONDITIONS

Darkness, with:

1. ☒ Daylight
2. ☐ Dawn
3. ☐ Dusk
4. ☐ Street lights between intersections
5. ☐ Street lights at intersections
6. ☐ No street lights

### DISTRICT

| Inside City Limits | Outside City Limits |
|---|---|
| 1. ☒ Business | 7. ☐ Built-up area or community |
| 2. ☐ Industrial | 8. ☐ State highway |
| 3. ☐ Residential | 9. ☐ County or market road |
| 4. ☐ School | X. ☐ Other—Specify |
| 5. ☐ Open area | |
| 6. ☐ Other—Specify | |

### CHARACTER OF ROAD

(Check One in Each Group)

1. ☒ Street or highway intersection
2. ☐ Alley or driveway intersection
3. ☐ Straight — 1. ☐ Level 2. ☐ Up or downgrade 3. ☐ Hillcrest
4. ☐ Curve
5. ☐ Bridge

### ROAD CONDITIONS

1. ☐ Low or soft shoulders
2. ☐ Holes or deep ruts in roadway
3. ☐ Lighted obstruction in roadway
4. ☐ Unlighted obstruction in roadway
5. ☐ Road obstructed by previous accident
6. ☐ Road under repair
7. ☐ Loose gravel or material
8. ☒ No defect

### ROAD SURFACE

1. ☒ Dry
2. ☐ Wet
3. ☐ Snowy
4. ☐ Icy
5. ☐ Muddy
6. ☐ Slippery
7. ☐ Other—Specify

### TYPE OF ROAD

1. ☐ Paved—Center stripe painted
2. ☒ Paved—No center stripe
3. ☐ Gravel
4. ☐ Earth
5. ☐ Plank road or bridge deck

### TRAFFIC CONTROL

1. ☐ Traffic signals—stop and go
2. ☐ Flashing beacon
3. ☒ Stop sign
4. ☐ Warning sign
5. ☐ Police officer
6. ☐ Not functioning
7. ☐ No control

### VIEW OBSTRUCTED BY:

1. ☐ Rain, snow, etc., on windshield
2. ☐ Cracked or dirty windshield
3. ☐ Load on vehicle
4. ☐ Standing vehicles
5. ☒ Buildings
6. ☐ Trees, crops, etc.
7. ☐ Embankments
8. ☐ Signboards
9. ☐ No obstruction

### CONDITION OF VEHICLES

| | Your Car | Other Car | Third Car |
|---|---|---|---|
| 1. Faulty brakes | ☐ | ☐ | ☐ |
| 2. Tail light out or obscured | ☐ | ☐ | ☐ |
| 3. Glaring headlights | ☐ | ☐ | ☐ |
| 4. One headlight out | ☐ | ☐ | ☐ |
| 5. Both headlights out | ☐ | ☐ | ☐ |
| 6. Puncture or blowout | ☐ | ☐ | ☐ |
| 7. Defective steering gear | ☐ | ☐ | ☐ |
| 8. Other defects* | ☐ | ☐ | ☐ |
| 9. No defects apparent | ☒ | ☒ | ☐ |

* Describe in "Remarks"

OVER—Report Must Be Completed on Both Sides

Form O D 32—100M—5-43

(Back of form OD 32)

CHECK WITH AN X ALL ITEMS THAT APPLY TO THIS ACCIDENT

### DRIVER'S ACTIONS

| | Your Car | Other Car | Third Car | Pedestrian |
|---|---|---|---|---|
| 1. Excessive speed | ☐ | ☐ | ☐ | ☐ |
| 2. Did not have right of way | ☐ | ☒ | ☐ | ☐ |
| 3. On wrong side of road | ☐ | ☐ | ☐ | ☐ |
| 4. Drove through safety zone | ☐ | ☐ | ☐ | ☐ |
| 5. Passing on curve | ☐ | ☐ | ☐ | ☐ |
| 6. Passing near crest of hill | ☐ | ☐ | ☐ | ☐ |
| 7. Passing on wrong side | ☐ | ☐ | ☐ | ☐ |
| 8. Passing standing streetcar | ☐ | ☐ | ☐ | ☐ |
| 9. Passing at intersection | ☐ | ☐ | ☐ | ☐ |
| 10. Cutting in | ☐ | ☐ | ☐ | ☐ |
| 11. Failure to signal, improper signal | ☐ | ☐ | ☐ | ☐ |
| 12. Wide right turn | ☐ | ☐ | ☐ | ☐ |
| 13. Cut corner on left turn | ☐ | ☐ | ☐ | ☐ |
| 14. Turned from wrong lane | ☐ | ☐ | ☐ | ☐ |
| 15. Turned into wrong lane | ☐ | ☐ | ☐ | ☐ |
| 16. Disregarded stop sign or signal | ☐ | ☐ | ☐ | ☐ |
| 17. Disregarded warning sign or signal | ☐ | ☐ | ☐ | ☐ |
| 18. Disregarded police officer | ☐ | ☐ | ☐ | ☐ |
| 19. Improper starting from parked position | ☐ | ☐ | ☐ | ☐ |
| 20. Improper or double parking | ☐ | ☐ | ☐ | ☐ |
| 21. Following too close | ☐ | ☐ | ☐ | ☐ |
| 22. Drove off roadway | ☐ | ☐ | ☐ | ☐ |
| 23. Forced off roadway | ☐ | ☐ | ☐ | ☐ |
| 24. Made sudden stop | ☐ | ☐ | ☐ | ☐ |
| 25. Avoiding pedestrian, vehicle or object | ☐ | ☐ | ☐ | ☐ |
| 26. Skidding | ☐ | ☐ | ☐ | ☐ |
| 27. Car ran away—no driver | ☐ | ☐ | ☐ | ☐ |
| 28. Other improper action—explain | ☐ | ☐ | ☐ | ☐ |
| 29. ☒ No improper driving | ☐ | ☐ | ☐ | ☐ |

### CONDITION OF DRIVER AND PEDESTRIAN

| | Your Car | Other Car | Third Car | Pedestrian |
|---|---|---|---|---|
| 1. Physical defect, eyesight, etc. | ☐ | ☐ | ☐ | ☐ |
| 2. Fatigued | ☐ | ☐ | ☐ | ☐ |
| 3. Apparently asleep | ☐ | ☐ | ☐ | ☐ |
| 4. Blinded by headlights or sun | ☐ | ☐ | ☐ | ☐ |
| 5. Confused by traffic | ☐ | ☐ | ☐ | ☐ |
| 6. ☒ Apparently normal | ☒ | ☐ | ☐ | ☐ |
| (Check one of the following:) | | | | |
| 7. ☒ Had not been drinking | ☒ | ☐ | ☐ | ☐ |
| Had been drinking. If so— | | | | |
| 8. Obviously drunk | ☐ | ☐ | ☐ | ☐ |
| 9. Ability impaired | ☐ | ☐ | ☐ | ☐ |
| X. Ability not impaired | ☐ | ☐ | ☐ | ☐ |
| R. Not known if impaired | ☐ | ☐ | ☐ | ☐ |

### DIRECTION OF TRAVEL

| | Your Car | Other Car | Third Car | Pedestrian |
|---|---|---|---|---|
| 1. ☒ Going straight ahead | ☒ | ☐ | ☐ | ☐ |
| 2. Making right turn | ☐ | ☐ | ☐ | ☐ |
| 3. Making left turn | ☐ | ☐ | ☐ | ☐ |
| 4. Making "U" turn | ☐ | ☐ | ☐ | ☐ |
| 5. Overtaking | ☐ | ☐ | ☐ | ☐ |
| 6. Forward from curb | ☐ | ☐ | ☐ | ☐ |
| 7. Backing from curb | ☐ | ☐ | ☐ | ☐ |
| 8. Other backing | ☐ | ☐ | ☐ | ☐ |
| 9. Stopped in traffic | ☐ | ☐ | ☐ | ☐ |
| X. Parking | ☐ | ☐ | ☐ | ☐ |
| R. Parked | ☐ | ☐ | ☐ | ☐ |

### ANGLE OF COLLISION

1. ☒ Broadside or right angle
2. ☐ Head-on
3. ☐ Rear end
4. ☐ Backed into other vehicle
5. ☐ Sideswiped—meeting
6. ☐ Sideswiped—overtaking
7. ☐ Parking
8. ☐ Pedestrian accidents
9. ☐ Other single-vehicle accidents

### PEDESTRIAN'S ACTIONS

1. ☐ Crossing at intersection—no traffic signal
2. ☐ Same—against traffic signal
3. ☐ Same—with traffic signal
4. ☐ Same—diagonally
5. ☐ Crossing between intersections
6. ☐ Crossing highway
7. ☐ Coming from behind parked vehicle
8. ☐ Getting on or off streetcar
9. ☐ Standing in safety zone
10. ☐ Getting on or off vehicle
11. ☐ Walking in roadway facing traffic
12. ☐ Walking in roadway with traffic
13. ☐ Playing in street or roadway
14. ☐ Working on car in roadway
15. ☐ Working on road
16. ☐ Walked into side of car
17. ☐ Stepping from curb
18. ☐ Hitching on vehicle
19. ☐ Not in roadway
20. ☐ Not known

Pedestrian was going _____ (North, east, etc.) ☐ On ☐ Across _____ (Street or highway name) from _____ to _____ (S. E. corner to N. E. corner, or west to east side, etc.)

Were crosswalks marked? ☐ Yes ☐ No

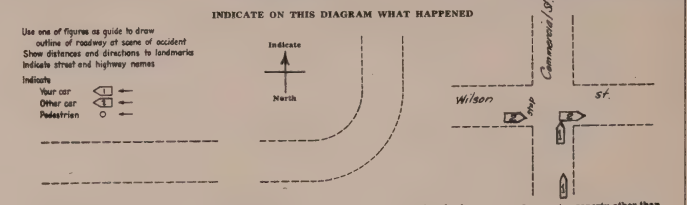
Was pedestrian inside markings or extensions of sidewalk lines? ☐ Yes ☐ No

Pedestrian was wearing ☐ Light-colored clothing ☐ Dark-colored clothing

### INDICATE ON THIS DIAGRAM WHAT HAPPENED

Use one of figures as guide to draw outline of roadway at scene of accident
Show distances and directions to landmarks
Indicate street and highway names

Indicate
Your car
Other car
Pedestrian




Additional remarks and further description of accident, vehicles, drivers, or persons injured; also describe damage to property other than vehicles: _____

Report received by _____ (Signature of officer)

SIGN HERE (S) John Doe (Person making report)

# REPORT OF ACCIDENT

## TRUCK INSURANCE EXCHANGE

Assigned to
Date assigned

Reported at: City Salem State Oregon Date June 25 1945

1. POLICYHOLDER Oregon State Highway Commission (As appears on policy) Policy No.

Address Salem, Oregon Phone No.
(If RFD, give name of nearest cross roads)

Was premium Paid up to Date of Accident?

| COVERAGE AS OF DATE OF ACCIDENT | | | | |
|---|---|---|---|---|
| PL | PD | P&T | Collision (State Kind) | Comprehensive |
| | | | | |

2. IMPORTANT! DESCRIBE VEHICLES! (Not necessary on Gross Receipts Pol. except on Collision claims)

TRUCK TRACTOR or BUS: Year 1938 Make Ford Kind of Body Sedan Model
MOTOR NO. 36E24321 SERIAL NO. Equip. No. 38-63
Name of Registered Owner

TRAILER: Year Make Kind of Body SERIAL NO. Equip. No
Name of Registered Owner

SEMI: Year Make Kind of Body SERIAL NO. Equip. No
Name of Registered Owner

3. WERE ANY OF THE ABOVE DESCRIBED VEHICLES RENTED OR LEASED OUT BY YOU AT TIME OF LOSS?

4. Name of Driver John Doe Age 38 Driver your employee? Yes
Driver's Address: 123 Third St. (No. and Street) Salem (City) Ore (State)

5. State number of occupants in your vehicle: 4 Are they your employees? Yes

6. OTHER VEHICLE:
Make Dodge Year 1940 Type Sedan License No. 365-954
Reg. Owner Paul O. Roe Address 345-4th St. Salem, Ore.
Driver (owner) Age 43 Address " " " "
OCCUPANTS OF OTHER VEHICLE (If more space required, use separate sheet.)
Name None Address
Name Address

7. WITNESSES NOT IN EITHER VEHICLE—If no eye witnesses, state names of first persons to arrive:
Name Tom T. Smith Address 456 - Fifth St. Salem, Ore
Name Bill B. Brown Address 567 - Sixth St. " "
(If more space required, use separate sheet)

8. PERSONS INJURED—If none, so state None
Name Age Address City
Describe Injuries
Where Taken Physician Phone
Name Age Address City
Describe Injuries
Where Taken Physician Phone
(If more space required, use separate sheet)

9. FACTS OF ACCIDENT—Please answer every pertinent question.
Date of accident June 24 1945 Time 5:15 P.M.
Location of accident Intersection of Commercial & Wilson Streets
in Salem City Marion County Oregon State
Direction you were traveling? North Name of street? Commercial Speed? 20
Direction other vehicle traveling? East Name of street? Wilson Speed? 10
Which vehicle entered intersection first? Yours? No Other vehicle? Yes
State speed of each vehicle as it entered intersection: Yours 20 Other vehicle entered from step
Was the view of either driver obstructed? Yes Speed limit at point of accident? 25

T-224 11-44 25M (OVER)

(Back of form T-224)

Where was other vehicle when you first saw it? Explain: Half way thru intersection

Where was your vehicle at that time? Explain: entering intersection

Length of skid marks: Your vehicle: 10 ft. Other vehicle: none ft.

10. Lights burning? Your vehicle: Head? No Tail? No Clearance? —
Other vehicle: Head? No Tail? No Clearance? —

11. Describe weather conditions: Wet? Dry? Dry Raining? Foggy? Snowing?

12. Did anyone admit responsibility for accident? No You? Other driver or pedestrian?

13. Did anyone violate any traffic laws? No You? Other driver or pedestrian?
Explain violation

14. Any arrests made? No You? Other driver or pedestrian? Charge?

15. Was accident reported to police? Yes Date: June 25 Where? Salem

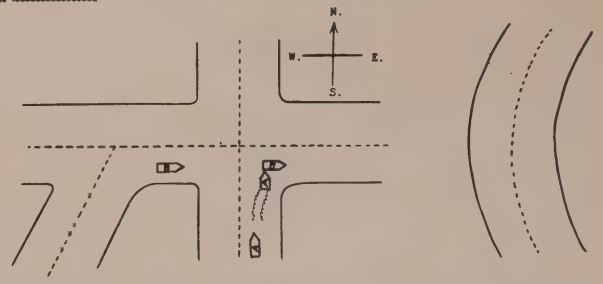
16. Did it appear that other driver or pedestrian had been drinking intoxicants? No

17. Did other driver claim to have insurance? No Name of company:

18. DESCRIBE IN YOUR OWN WORDS HOW ACCIDENT OCCURRED:

Traffic was heavy and I did not see other car crossing Commercial St. in time to stop

19. Draw diagram of accident showing your vehicle as ⟨ A ⟩; other vehicle as [ B ]. Indicate relative position of vehicles as they approached each other. Show point of collision and position and distances traveled after collision. Show skid and tire marks ≡ ~~~~~~~~~~




20. DESCRIBE DAMAGE TO POLICYHOLDER'S VEHICLES: Mashed left front fender, broken bumper and smashed radiator grille
Estimate Damage: $ 30.00

21. DESCRIBE DAMAGE TO OTHER VEHICLE OR PROPERTY AND ESTIMATE AMOUNT OF DAMAGE: Mashed rear fender
Estimate Damage: $ 12.00

THIS REPORT MUST BE SIGNED BY DRIVER AND POLICYHOLDER.

SIGNATURE:
Driver John Doe Insured

THIS CLAIM BEING HANDLED BY
(Indicate name of District Manager or Branch Claims Office)

Form A-201—12M—11-41

OREGON STATE HIGHWAY COMMISSION
Salem, Oregon

# Exemption Certificate

(For items purchased for sale)

Date March 2 1943 No. 1

The undersigned hereby certifies that he is Transitman (Title) of the Oregon State Highway Commission and that he is authorized to execute this certificate and that the article or articles specified below are purchased from Southern Pacific R.R. Co. (Name of Company) for the exclusive use of the State Highway Commission of the state of Oregon. It is understood that the exemption from tax in the case of sales of articles under this exemption certificate to the United States Government applies to articles purchased for their exclusive use, and it is agreed that if articles purchased tax free under this exemption certificate are used otherwise or are sold to employes or others, such fact will be reported by me to the manufacturer of the article or articles covered by this certificate. It is also understood that the fraudulent use of this certificate to secure exemption will subject the undersigned and all guilty parties to a fine of not more than $10,000, or to imprisonment for not more than five years, or both, together with costs of prosecution.

Signature Paul A. Rae Title Transitman

| DESCRIPTION OF ARTICLE | Gross Amount Charged | Less Federal Excise Tax | Net Amount Paid |
|---|---|---|---|
| R.R. Ticket - Salem to Klamath Falls | 7 57 | 99 | 6 58 |
| | | | |
| | | | |
| | | | |

INSTRUCTIONS: Gross amount charged, federal excise tax, and net amount paid, are to be shown for each item. Attach copy of this certificate to expense account.

Received payment

Seller

---

Draw rough diagram of accident—measure or step off distances of skid marks, position of vehicles, relation to each other, etc. Show names of streets or highways and widths.

Show your vehicle as "A", other vehicle as "B", etc. 





TRUCK INSURANCE EXCHANGE

# Driver's Preliminary Report of Accident

Must Be Completed Immediately at Place of Accident

## IMPORTANT

In all accidents involving injury or death call nearest Claim office or adjusting unit. See list, or consult Classified section of telephone directory for office or agent of Truck Insurance Exchange or Farmers Automobile Inter-Insurance Exchange.

## READ THIS!
## WHAT TO DO IN CASE OF ACCIDENT

1. Put out flags or flares as required by law.
2. Render Aid.
3. Do not argue.
4. Do not admit responsibility, regardless of facts.
5. Do not agree to pay for anything.
6. Be courteous—good conduct helps.
7. Do not move vehicles until someone arrives who can state position of vehicles, position and length of skid and tire marks and lights on truck. Get their names and addresses—if refused, get license number of their vehicles.

## IMPORTANT

8. Get witness to accident. If no eye-witness, names and addresses of first persons to arrive. If witnesses refuse to give names, get license numbers of vehicles they are in.

T 36 3-43 10M 62

(Back of Form T-36)

9. Order photographs of accident if you feel they will help prove you are not responsible for accident and Exchange will reimburse you.
10. Do not talk or give statement to anyone unless they satisfy you they represent your insurance Exchange.

## IMPORTANT

Complete at scene of accident—Note instructions.
Names and addresses of witnesses, including first persons to arrive:

1. NAME Tom B. Smith
ADDRESS 456 Fifth St, Salem, Ore.
2. NAME Bill B. Brown
ADDRESS 567 Sixth St, Salem, Ore.
3. NAME
ADDRESS
4. NAME
ADDRESS

Names and addresses of Persons Injured:

1. NAME
ADDRESS
2. NAME
ADDRESS
3. NAME
ADDRESS

Name and address of Registered and Legal Owner of Other Vehicle:

Name: Paul A Rae
Address: 385 Fourth St, Salem, Ore

Name and address of Driver of other vehicle:

Name: same as owner
Address:

Other vehicle involved:

Year Model: 1940 Make Dodge Sedan
License No. 365-954

## NOTICE

On claims involving injury, death or serious damage, turn this report over to adjuster. On accidents involving slight damage, complete regular accident report immediately on reaching your base of operations and forward to nearest claims office; or report claim to the District Manager or Agent, who will furnish you with the necessary form. The intent of this report is to assist the driver to obtain essential information at scene of accident which should not be trusted to memory, and to instruct driver what to do.

**DO NOT MAIL THIS TO ANY OFFICE OF THE EXCHANGE.**

*Draw Diagram on Reverse Side*

Form A-23—5M—11-40
STATE PRINTING DEPT.

OREGON STATE HIGHWAY COMMISSION

# EXPENSE STATEMENT

Sheet 1 of 1 Sheets

Name: John A. Doe
Employed as: Transitman, Grade 1

Mail Address: Box 165 B, Klamath Falls
Expenses from March 1 to March 31, 1943

Headquarters Address: Klamath Falls
Occasion for Expenses: New Assignment

| Date | LOCATION | Breakfast | Lunch | Dinner | Lodging | Days Total Meals and Lodging (a) | Storage (b) |
|---|---|---|---|---|---|---|---|
| 3/2 | Klamath Falls | | | 1.00 | 3.00 | 4.00 | |
| 3/3 | " " | .50 | | | | .50 | |
| 3/15 | Lakeview | | .60 | 1.15 | 2.50 | 4.25 | .50 |
| 3/16 | " | .50 | .75 | | | 1.25 | |
| | TOTALS (a), (b) | | | | | 10.00 | .50 |

| Ry., Stage or Private Car | Date | | TRANSPORTATION AND MILEAGE (Show mileage for private cars only) | Miles | Amount (c) | |
|---|---|---|---|---|---|---|
| Ry. | 3 | 2 | From Salem To Klamath Falls (exclusive of tax) | | 6 | 58 |
| | | | From To | | | |
| | | | From To | | | |
| | | | From To | | | |
| | | | From To | | | |
| | | | From To | | | |
| | | | From To | | | |
| | | | TOTAL (c) | | 6 | 58 |

| Date | | MISCELLANEOUS (Including Expenditures on Department Equipment) | Amount (d) | |
|---|---|---|---|---|
| 3 | 2 | Taxi - Klamath Falls | | .50 |
| 3 | 15 | Tire repair | | .50 |
| 3 | 15 | Spark plug | | .65 |
| | | TOTAL (d) | 1 | 65 |

**COST DISTRIBUTION**

| Prefix | Acct. No. | Amount | |
|---|---|---|---|
| 118-1468 | 900 | 11 | 58 |
| 19-1431 | 900 | 6 | 50 |
| Shop | | | 65 |
| TOTAL | | 18 | 73 |

**ANALYSIS OF EXPENDITURES ON EQUIPMENT**
From (b) and (d)

| Equip. No. | Labor | Parts | Tires | Storage |
|---|---|---|---|---|
| 38-56 | | 65 | 50 | 50 |

**SUMMARY OF EXPENDITURES**

| | Class of Expense | Amount | |
|---|---|---|---|
| (a) | Meals and Lodging | 10 | 00 |
| (b) | Car Storage | | 50 |
| (c) | Transportation and Mileage | 6 | 58 |
| (d) | Miscellaneous | 1 | 65 |
| | TOTAL CLAIM | 18 | 73 |

Approved: ______________________ Staff Engineer

Checked by: ______________________

Indexed by: ____________ Equipment Cards punched: ____________

I HEREBY CERTIFY that the above is a true and correct statement of expenses actually and necessarily incurred by me in the performance of my official duties.

Signature: John A Doe

Approved: John McSmith [signature] Immediate Superior

INSTRUCTIONS: Submit two copies to Accounting Division; attach receipts IN DUPLICATE for all miscellaneous items amounting to $1.00 each, or more.

## SECTION 2. PAY ROLLS AND ABSENCES

*Article*

1. Standard Wage Schedule.
2. Vacations and Other Absences.
3. Preparation of Pay Rolls.
4. Hours of Employment and Overtime.
5. Instructions Applicable to All Classes of Absent Time.
6. Accounting Procedure—Vacations and Sick Leaves.
7. Accounting Procedure for Withholding Tax Deductions.
8. Time Statements.
9. Time Checks.
10. Receipts for Time Checks.
11. Monthly Statement of Checks Issued.
12. Division Office to Keep Time Statement Register.
13. General Instructions Regarding Time Checks.
14. Delivery of Regular Pay Checks.

### Article 1—Standard Wage Schedule

The following wage schedule shall be referred to in making out an application for "Wage Rate Approval," form number A-60. No rate will be allowed except as contained in this list. Be sure and give only a title as listed; others will not be approved.

| *Major Classification* | *Position* | *Salary (44 Hour Week)* | *Salary (48 Hour Week)* |
|---|---|---|---|
| Classification 2—$240 to $335 | Resident Engineer (Grade 4) | $ 310 | $ 335 |
| | " " ( " 3) | 293 | 316 |
| | " " ( " 2) | 266 | 287 |
| | " " ( " 1) | 250 | 270 |
| | Locating Engineer (Grade 4) | 310 | 335 |
| | " " ( " 3) | 293 | 316 |
| | " " ( " 2) | 266 | 287 |
| | " " ( " 1) | 250 | 270 |
| Classification 1—$145 to $245 | Transitman (Grade 2) | 225 | 243 |
| | " ( " 1) | 210 | 226 |
| | Draftsman (Grade 4) | 225 | 243 |
| | " ( " 3) | 210 | 226 |
| | " ( " 2) | 200 | 215 |
| | " ( " 1) | 190 | 204 |
| | Field Assistant (Grade 4) | 190 | 204 |
| | " " ( " 3) | 175 | 188 |
| | " " ( " 2) | 165 | 177 |
| | " " ( " 1) | 150 | 161 |
| | Inspector (Grade 4) | 215 | 232 |
| | " ( " 3) | 190 | 204 |
| | " ( " 2) | 175 | 188 |
| | " ( " 1) | 165 | 177 |
| | Checker (Grade 2) | 165 | 177 |
| | " ( " 1) | 145 | 155 |
| | Levelman | 190 | 204 |
| | Topographer | 190 | 204 |
| | Computer | 190 | 204 |
| | Head Chainman | 180 | 193 |
| | Chainman | 165 | 177 |
| | Stakeman | 145 | 155 |
| | Flagman | 145 | 155 |
| | Axeman | 145 | 155 |

## Article 2—Vacations and Other Absences

### SUNDAYS, SATURDAY AFTERNOONS AND HOLIDAYS

Persons employed on a monthly rate basis shall, as a general policy, be allowed "time off with pay" on Sundays and legal holidays and on such other days or part days, if any, as are recognized non-work days under the applicable work schedule. However, no monthly-rate employee will be entitled to such time off or will receive such time off when, due to emergencies, unusual circumstances, or necessity of coordinating the Department's operations with the operations of contractors and others, the service of the employee is needed on Sundays, holidays, or other non-work days.

When the nature of the work to be performed by an employee is such that he will regularly or frequently be required to work on Sundays, holidays and/or other non-work days, that condition should be made known to him when he is assigned to the work and, unless the condition is satisfactory to him, he should not be permitted to undertake the assignment.

When an employee is required only occasionally to work on Sundays, holidays and/or other non-work days, the time so worked may be offset by allowing the employee time off on regular work days as provided hereinafter under the heading "Exchange Time."

For certain classes of employees, such as drawbridge operators and flagmen, where work on Sundays and holidays is regularly required, special schedules of working hours and non-work time shall be worked out to suit whatever special or particular conditions may be involved.

The legal holidays to which reference is made herein shall be as defined in Section 57-1104, Oregon Code 1930, from which the following paragraph is quoted:

> "The following days shall be and hereby are declared to be legal holidays in this state, to wit: Every Sunday, the first day of January, the 12th day of February, the 22nd day of February, the 30th day of May, the 4th day of July, the first Monday in September, known as Labor Day, the 12th day of October, the 11th day of November, the 25th day of December, and every day on which an election is held throughout the state, and every day appointed by the President of the United States or by the Governor of this state as a day of public fasting, thanksgiving or holiday. Whenever any legal holiday other than a Sunday falls upon Sunday, the Monday following shall be, and be observed as, such holiday."

### EXCHANGE TIME

*Application of Exchange Time*—Under certain conditions, it is permissible to work certain classes of employees outside of the regular working hours and, if such work is of substantial amount, to grant to the employees, in exchange therefor, equal amounts of time-off during their regular working hours.

The classes of employees who may be thus worked on an "exchange time" basis are as follows:

1. Civil engineers
2. Supervisors
3. Inspectors
4. Checkers
5. Superintendents
6. Foremen
7. Timekeepers
8. Watchmen

Other classes of employees may be so worked only when the extra time to be worked does not cause the total time worked to exceed 8 hours in any one day or 48 hours in any one calendar week. For these latter classes of employees, time worked in excess of 8 hours in any one day or 48 hours in any one calendar week is "double-rate overtime" and must, under the law, be paid for at double the regular rate of pay.

Only in cases of necessity, emergency, or where the public policy absolutely requires it, may an employee be worked more than 8 hours in any one day or 48 hours in any one week.

Time-off granted to an employee in exchange for time worked outside of his regular working hours, as above provided, will be referred to herein as "exchange time leave." The time worked outside of regular working hours will be referred to as "exchange time worked."

*Definition of Terms*—The term "civil engineers," as used herein, is understood to embrace all employees engaged in work of an engineering nature, including chainmen, rodmen, and computers, and office assistants in the Engineering Department.

The terms "foremen," "superintendents" and "supervisors" are understood to embrace all employees, regardless of their classifications, having supervision over the work of one or more other employees.

The term "inspector" is understood to embrace all employees engaged in inspection work, including weighmasters.

*Reporting of Time Worked and of Leave Taken*—When an employee is worked on an exchange time basis, the time worked outside of regular working hours is not to be shown on the pay roll, but instead, is to be reported on the

standard "Report on Exchange Time Worked" (Form A-220), giving the name, the classification, the dates and the numbers of hours, together with a statement explaining the necessity for the extra employment. The original copy of the Report on Exchange Time Worked shall be submitted to the Accounting Division with the pay roll for the month (or pay roll period) during which the extra service was rendered.

Exchange time leave taken by the employee in return for exchange time worked shall be reported on the "Statement of Absent Time" (Form A-58), along with other absent time, as described in Section 2, Article 5.

*Limitations on Allowance of Exchange Time*—The working of employees on an exchange time basis is to be resorted to only as a temporary emergency measure, and the amount of work performed on that basis shall be held as low as possible.

Work outside of regular working hours is not to be considered exchange time work and is not to be reported as "exchange time worked" unless it is in substantial amount (one hour or more, in the day), and is ordered to be done on an exchange time basis by the person under whose supervision the employee works. The time is to be reported to nearest hour and without the use of fractions. Work outside of regular working hours is not to be reported as exchange time worked, in cases where the offsetting exchange time leave is taken on the same day.

Work outside of regular working hours, not reported with the pay roll for the month during which it is performed, may not be claimed as exchange time work at a later time.

*Exchange Time Leave to be Taken Only When and as Directed*—Exchange time leave is to be taken when and as directed by the Department Head, Division Engineer, Maintenance Superintendent, Resident Engineer or other supervisory employee under whose supervision the employee is working. When practicable, the leave should be arranged for and taken within a week or two of the time the extra service is rendered. Only when necessitated by continued man-power shortage, or by unavoidable circumstances, shall the taking of earned leave be delayed for a longer period.

*Exchange Time Credit to Lapse After Second Month*—Exchange time credit not used before the end of the second month following the month in which it is earned, shall be understood to have lapsed and to be no longer available to the employee, unless an extension of the time limit, in the particular instance, will be of benefit to the Department and is authorized by the State Highway Engineer or the Assistant State Highway Engineer.

*Payment for Exchange Time When Authorized*—The making of payment to employees, in lieu of the granting of exchange time leave is not ordinarily permissible, but during the war emergency and the attendant man-power shortage, when the interest of the Department may be best served by keeping the employee in continuous service, such payment will, when conditions warrant, be authorized. When such payment appears warranted, a request should be addressed to the State Highway Engineer or the Assistant State Highway Engineer, through the proper Staff Engineer or Department Head, setting forth the facts in the case and describing the conditions which prevent the granting of exchange time leave within the required time limit or a reasonable extension thereof. If the request is approved by the State Highway Engineer or the Assistant State Highway Engineer, supplemental pay rolls allowing payment for the exchange time worked may be submitted.

From the above, you will note that payment for exchange time is to be regarded as *definitely the exception rather than the rule* and should only be employed as a last resort when it is impossible to grant the employee in question an equivalent amount of time off.

When payment is made for exchange time, the rate of pay per hour will be as determined by the formula:

$$\text{Hourly rate} = \frac{\text{MR}}{4.3333\ \text{HW}}$$

in which MR is the monthly rate at the time the work is performed, and HW is the number of hours of work in the corresponding regular work week.

## VACATION LEAVE

*Employees Entitled to Vacation Leave*—Subject to the limitations stated herein, each employee (hourly-rate as well as monthly-rate) will be granted one day of vacation leave, with pay, for each calendar month during which his employment has been not less than three full weeks or the equivalent.

For monthly-rate employees, twenty-one (21) calendar days will be considered the equivalent of three full weeks. For hourly-rate

employees, a number of hours equal to the number of regular work-hours in three full weeks will be considered the equivalent of three full weeks.

*Vacation Leave to be Accumulative*—Vacation leave credit time will be accumulative up to a maximum of eighteen (18) working days. When the maximum is reached, the crediting of leave time allowance will cease until a reduction in credit occurs by reason of vacation leave being taken.

An employee who has been on leave from the Department for service in the armed forces of the U. S. Army, Navy or Marine Corps shall, if he returns to the service of the Department immediately following his discharge from the Army, Navy or Marine Corps, be allowed six (6) days of vacation credit as a starting credit at the time of his re-entry into the service of the Department.

*Charging for Vacation Leave Taken*—When vacation leave is taken, it shall be charged against the employee's vacation leave credit at the rate of one day for each work day in the period of leave. Days which are half work-day and half non-work-day shall be charged as half days.

*Pay Allowance*—The pay time to be allowed an hourly-rate employee while on vacation leave shall be the same number of hours per day and the same number of days per week (holiday excepted) as are in the employee's regular working schedule at the time the vacation leave is taken, with the proviso, however, that if the regular working schedule includes any overtime, or time in excess of eight hours per day or 48 hours per week, such overtime and excess time shall be excluded from the vacation pay time.

The rate of pay to be allowed an employee while on vacation leave shall be the same as would be allowed him during the same period if he worked, or such higher rate, if any, as the employee may have been paid by the Department for a period not shorter than eight weeks (or the equivalent thereof in days or work-hours), during the expired portion of the current calendar year, except as follows:

> If the rate of pay to be allowed, as specified in the above paragraph, is a monthly rate based on a work-week longer than 48 hours, the rate of pay to be allowed shall be the corresponding rate based on a work-week of 48 hours.

*Vacation Leaves to be Taken Only When and As Approved*—Vacation time shall be taken only when and as approved by the Department Head, Division Engineer, Maintenance Superintendent, Resident Engineer or other supervisory employee under whose supervision the employee is working, and it shall be a duty of each supervisory employee to control and schedule the vacations of his employees in such manner as will cause as little interference as possible with the routine performance of the Department's work, and as will hold to a minimum the employment of extra help to substitute for absentees.

In permitting employees to take vacation leave, the supervisory employee should either check with the Accounting Division on the amount of vacation time earned, or should caution the employee that any part of the vacation that is in excess of the earned vacation allowance as determined by the Accounting Division will be "without pay."

Insofar as practicable, vacations shall be allowed only during periods when the work is slack.

*Adjustment for Forced Loss of Credit*—When an employee is required by his superiors to defer his vacation, in order to better serve the needs of the Department, and thereby is subjected to loss of vacation credit by reason of his accumulation of credit having already reached the maximum of 18 days, then, the employee, will, when the Department can permit the vacation to be taken, be allowed an extra day of vacation for each day of credit lost through the deferment. The number of extra days to be so allowed shall not, however, exceed five, and all must be used within the 60 days which follow the period during which the needs of the Department have prevented the taking of the vacation.

When extra days of vacation are allowed in accordance with the provisions above stated, the pay roll on which they are carried must be accompanied by a letter from the person responsible for the pay roll, stating the conditions which have necessitated the deferment of the vacation and giving both the beginning and ending dates of the period during which those conditions prevailed. On the "Statement of Absent Time" which accompanies the pay roll, the extra days shall be listed on a line separate from the regular vacation time of the same employee and shall be marked "Extra Vacation."

*Extension of Vacation Time*—An employee who extends his vacation beyond the amount of his vacation leave credit shall be considered to have taken a leave of absence without pay for the whole of the extended period. The leave without pay will be subject to the conditions stated herein under "Absence Without Pay."

A vacation shall be extended beyond the amount of vacation credit only when the extension is approved in advance by the Division Engineer and the Staff Engineer or Department Head.

*Sickness During Vacation*—In cases where sickness or injury is incurred by the employee during a vacation leave period, the time lost due to the sickness or injury shall be charged as vacation time, unless the time lost is three days or more, in which event, if the employee has sick leave time available, the time lost may be charged as sick leave time.

In the event of death, the pay time of the employee cannot legally extend beyond the hour of his death, and no allowance for unused vacation time which would extend the pay time beyond that hour can be made to the heirs.

*Advance Payment Not Permissible*—Payment for vacation time (or any other pay time) cannot, under any circumstances, be made until the time to be paid for has elapsed.

## SICK LEAVE

*Employees Entitled to Sick Leave*—Subject to the limitations stated herein, each employee (hourly-rate as well as monthly-rate) will be granted one day of sick leave, with pay, for each calendar month during which his employment has been not less than three full weeks or the equivalent.

For monthly-rate employees, twenty-one calendar days will be considered the equivalent of three full weeks. For hourly-rate employees, a number of hours equal to the number of regular work-hours in three full weeks will be considered the equivalent of three full weeks.

*Sick Leave Credit Time Accumulative*—Sick leave credit time will be accumulative up to a maximum of sixty (60) days. When the maximum is reached, the crediting of time will cease until a reduction in credit occurs by reason of a sick leave being taken.

Allowance of sick leave credit as herein provided for will begin with the month of October, 1943.

Employees having an unused sick leave credit as of October 1, 1943, under the regulations heretofore in effect, will be allowed that credit, to a maximum of sixty (60) days, as a starting credit under this plan.

Those employees of the Department who have not heretofore had sick leave allowance will be allowed a starting credit of one day for each calendar month of employment in the Department, during the period from January 1, 1938, to September 30, 1943, to a maximum of sixty (60) days. In this connection, each calendar month during which the employment has been not less than three full weeks, or the equivalent thereof, shall be considered a calendar month of employment.

An employee who has been on leave from the Department for service in the armed forces of the United States Army, Navy or Marine Corps shall, if he returns to the service of the Department immediately following his discharge from the Army, Navy or Marine Corps, be allowed one day of sick leave credit for each month of service in said armed forces while on leave from the Department, this sick leave credit to be in addition to sick leave credit accumulated prior to his joining said armed forces; provided, however, that the combined total of sick leave credit shall, at no time, be greater than sixty (60) days.

*Cancellation and Termination of Sick Leave Credit Allowances*—An employee's right to sick leave with pay shall terminate at the same time his employment by the Department terminates. However, in the event the employee is reemployed by the Department after an absence not exceeding two (2) years, the accumulation of sick leave credit which the employee had at the time his employment was terminated, will be restored to him, and will be available to be drawn upon as required until his employment with the Department is again terminated.

In no case shall it be considered that an employee leaving the service of the Department is entitled to payment for any unused sick leave credit.

Sick leave credit shall be understood to be a credit which can be extended to employees or taken from them at the discretion of the Highway Commission, and, under no circumstances, shall it be looked upon as a credit which, having once been allowed, cannot be withdrawn or cancelled at any time the Commission may elect to make a change in its policy with reference to sick leaves.

*Charging for Sick Leave*—When sick leave is taken, it shall be charged against the employee's sick leave credit at the rate of one day for each work-day during the period of leave. Days which are half work-day and half non-work-day will be charged as half days.

*Pay Allowance*—The pay time to be allowed an hourly-rate employee while on sick leave shall be the same number of hours per day and the same number of days per week (holidays excepted) as are in the employee's regular working schedule at the time the sick leave is taken, with the proviso, however, that if the regular working schedule includes any overtime, or time in excess of eight hours per day or 48 hours per week, such overtime and excess time shall be excluded from the sick leave pay time.

The rate of pay to be allowed an employee while on sick leave shall be the same as would be allowed him during the same period if he worked, except that if that rate of pay is a monthly rate based on a work-week longer than 48 hours, the rate of pay to be allowed shall be the corresponding rate based on a work-week of 48 hours.

*Sick Leave Applicable Only to Actual Sickness or Injury Suffered by Employee*—Sick leave on pay shall be allowed only when the absence of the employee from duty is made necessary by sickness or injury suffered by the employee himself. Sick leave time shall not be applied on absences occasioned by sickness in the family of the employee or on absences of any kind other than actual sickness or injury on the part of the employee.

*Physician's Certificate*—If a sick leave extends over a period greater than 7 days (working time), the leave will be granted on a "with pay" basis only if the employee submits a physician's certificate executed on the Department's "Physician's Certificate" form No. A-219. Physician's certificates or other proof of sickness or injury will not ordinarily be required for leaves which do not exceed 7 days in length, but shall be furnished if requested by the Accounting Division or by a supervisory employee.

*Reporting of Exceptional Cases*—Whenever it becomes apparent that a sick leave will extend over a longer period than thirty (30) days, the Department Head or Division Engineer shall make a personal investigation of the case and shall report the case to the State Highway Engineer or the Assistant State Highway Engineer with request for instructions. Similar procedure shall be followed whenever a sick leave extends beyond the date on which the pay of the employee concerned would otherwise be terminated.

*Sick Leave Due to Accident While on Duty*—Sick leave occasioned by accident while the employee is on duty, shall be subject to the same regulations and limitations as sick leave occasioned by other causes, except that any compensation paid to the employee by the State Accident Commission for time for which the employee also receives pay from the Highway Department shall be deducted from the employee's pay; and except, also, that the charge against the employee's sick leave accumulation may, under certain conditions, be made at a reduced rate. See Section 2, Article 6, covering accounting procedure.

*Sickness While on Vacation*—Sick leave may be allowed for sickness or injury incurred while the employee is on vacation only in case the time lost due to sickness or injury is more than three days and is supported by a physician's certificate.

*Abuse of Sick Leave Privilege Cause for Dismissal*—Abuse of the sick leave privilege shall be cause for dismissal from the service of the Highway Department.

## OTHER ABSENCES

Necessary absence for attendance to personal affairs will be charged against the employee's accumulation of vacation leave credit. Except when occasioned by extreme emergency, absence of this kind is not to be carried as pay time, unless the absence has been previously consented to by the supervisory employee in charge and is taken at a time acceptable to him.

## ABSENCE FOR JURY DUTY

Regular employees, including employees paid on an hourly basis, as well as employees paid on a monthly basis, when called on to serve as jurors in any state or federal court, will receive pay while absent on such service, in accordance with the following provisions.

Absence for jury duty (with pay) shall not exceed eleven (11) working days in any one year, unless a longer absence is previously authorized by the State Highway Engineer or the Assistant State Highway Engineer. No absence for jury duty (with pay) will be allowed an employee whose employment with the Highway Department, during the calendar year in which

the absence is to occur, is not expected to total at least six (6) months.

From the amount earned by the employee while absent on jury duty, there shall be deducted an amount equal to the amount of "per diem fees" collected (or collectible) for the jury service rendered, it being understood that the per diem fees are as follows:

| | |
|---|---|
| Justice Court Jury | $1.50 |
| Grand Jury | 3.00 |
| Circuit Court Jury: | |
| (a) While awaiting assignment to panel | 2.00 |
| (b) While serving on panel | 3.00 |

The deduction shall be made at the rate of $3.00 per day (Sundays and holidays excepted) unless the pay roll on which the absent time is shown is accompanied by a written statement from the employee setting forth the exact rates and amounts received for the service.

The pay allowance to be made to an employee while absent for jury duty shall be figured on the same basis as is hereinbefore prescribed for the pay allowance while on sick leave, subject, of course, to deductions as above indicated.

## ATTENDANCE AT COURT AS WITNESS

Attendance at Court as a witness may be considered a continuation of the employee's regular employment or may be considered an absence on leave without pay, depending upon the nature of the court case and the class of witness service to be rendered. In this connection, the following schedule shall apply:

1. When the court case involves the Highway Department or some other State department of Oregon, and the employee is called as a witness (either expert or fact witness) because of his connection with the Highway Department or the State Government, the attendance at Court will be considered a continuation of the employee's regular employment with the Department. He will be carried on the Department's pay roll and will receive the same amount of pay that he would have received had he not been called as a witness. Any witness or other fees earned and collected by him shall be promptly remitted to the Accounting Division through regular channels, accompanied by a suitable letter of explanation.
2. When the court case involves a State Highway contract (as, for instance, a suit between a contractor and a subcontractor), and the employee is called as a witness (either expert or fact witness) because of his connection with the Highway Department, the attendance at Court will be considered a continuation of the employee's regular employment with the Department. He will receive pay and shall dispose of any witness fees collected, the same as stipulated in paragraph 1 above.
3. When the court case is one which does not involve the Highway Department, another State Department of Oregon or a State Highway contract, the attendance at Court shall, if the employee is to serve as an *expert* witness, be considered an absence "without pay." If the employee is to serve as a *fact* witness only, the attendance will be considered an absence "without pay," unless the employee has unused vacation leave time which he desires to have applied on the absence, in which event, the application of such unused vacation leave time will be permissible.

An employee shall not voluntarily consent to serve as a witness (either expert witness or fact witness), unless such service has the prior approval of the supervisory employer under whom the employee works. If the case is one in which another State department is involved, or one involving expert testimony, it will be necessary for him to secure, also, the prior approval of the State Highway Engineer or the Assistant State Highway Engineer.

When an employee is required by subpoena to serve as a witness, it shall be the duty of the employee to give notice of the subpoena to his superior immediately upon receipt of the subpoena, so that provision for the absence may be made.

When an employee serves as a witness on a case involving the Highway Department, another State department or a State Highway contract, or on any case in which he is permitted to draw his regular salary or wage, he shall not be allowed to retain any fee for such service.

The pay allowance to be made an employee while serving as a court witness in accordance with the foregoing provisions shall be figured on the same basis as is prescribed for pay allowance while on sick leave, subject, of course, to deductions as above indicated.

The foregoing provisions in regard to service as witness shall apply to hourly rate employees as well as to monthly rate employees.

## TRAINING CAMP LEAVES

Employees who are members of the National Guard or of the reserve forces of the Army or

Navy will be allowed leaves of absence for such periods as they may, necessarily, be absent for ordered attendance at annual encampments, field exercises and training schools.

For those employees whose employment with the Highway Commission, during the calendar year, has exceeded or is expected to exceed six months, these leaves will be leaves "with pay" (and without loss of vacation) for periods totaling not more than fifteen (15) calendar days in any one calendar year. Leave time in excess of fifteen (15) calendar days in any one calendar year shall be "without pay," except as such excess time may be absorbed in vacation leave time to which the employee may be entitled.

For those employees whose employment with the Highway Commission, during the calendar year, is not expected to exceed six months, the leaves will be leaves "without pay," except for such of the leave time as may be absorbed in vacation leave time to which the employee may be entitled.

The pay allowance to be made an employee while on training camp leave in accordance with these provisions shall be figured on the same basis as is prescribed for pay allowance while on sick leave.

Employees expecting to utilize leaves of absence under these provisions shall give notice to the person, under whose supervision they are employed, at least two weeks in advance of the date on which the leave is to begin.

Employees taking leave under these provisions shall submit orders or statements from the appropriate military officers as evidence of required service, which orders or statements shall show the beginning and ending dates of the period served or to be served. The orders or statements here referred to shall be transmitted to the Salem Office attached to the "Statement of Absent Time" (Form A-58) which is regularly required to be submitted with pay rolls.

## LEAVES FOR SERVICE IN ARMY OR NAVY

An employee leaving the Department for temporary service in the armed forces of the United States Army, Navy or Marine Corps, voluntarily or otherwise, will be considered to be on a "leave without pay," for the period of such temporary service, and upon termination of such service will be entitled to reinstatement in the Department in the position occupied at the time of leaving, or in a position of equal rating, without loss of seniority.

When an employee is to leave for such temporary service, the supervisory employee in charge shall notify the Personnel Director at Salem, giving the name and address of the employee. The employee will then be furnished with a letter from the State Highway Engineer or the Assistant State Highway Engineer advising him personally of the understanding in regard to the reinstatement.

In employing persons and advancing employees to replace employees called for military service, or to fill vacancies caused by advancements made to replace such employees, it will be the duty of the supervisory employee to instruct the persons employed or advanced that their employment or advancement is temporary only and will terminate upon the return to the Department of the employee whose leave made the employment or advancement possible. It will be their duty, also, to notify the Personnel Director of each employment or advancement made under the above conditions so that a permanent record will be available for use when the service men return. This notification may be made by making a suitable statement on the wage rate approval form for the employee affected.

## ABSENCE WITHOUT PAY

Whenever a person employed on a monthly rate basis returns to work on a Monday (or on a day following a holiday), after having been for a time without pay, his pay time will start with Monday (or the day following the holiday), and not with Saturday afternoon, Sunday or the holiday, except in cases where the absence without pay, when figured on the above basis, would be only 4 days or less; in which event the Sunday and/or the holiday (but not the Saturday afternoon) may be included in the pay time.

In applying the provisions of the above paragraph, it shall be understood that if the day on which the employee resumes his duties is the first work day of a *month which has begun on a Sunday or a holiday,* the employee will be allowed pay for the Sunday and/or the holiday with which the month began.

The theory on which the understanding stated in the above paragraph is based is that, inasmuch as the employee is paid on a monthly rate basis, each month must be considered more or less separately from other months, and that

if the employee has worked every working day in a given month, he should be paid for the full month. Under the same theory, a monthly employee who begins an absence (which is to be without pay) after having worked all of the working time up to the end of the month, should be paid for the Saturday afternoon, the Sunday, and/or the holiday occurring on the last day or days of the month.

Whenever an absence is partly "with pay" and partly "without pay," the whole of the "with pay" time shall run first, and shall be entirely consumed before the "without pay" time commences.

**Article 3—Preparation of Pay Rolls**

Form A-51 Revised 1-44 is to be used in the preparation of pay rolls in quadruplicate for the offices of the Construction Department.

When the pay roll has been totaled and summarized, the person who prepared the pay roll is to sign each copy, and the person in charge of the office or crew is to sign likewise, certifying to the correctness and proper charge.

The original, duplicate and triplicate of the pay roll of a Resident Engineer or of a Locating Engineer are to be forwarded to the Division Engineer. The Division Engineer is to sign his approval on the back of each of the three copies, retain the triplicate and forward the original and duplicate to the Accounting Division, Salem.

The original, duplicate and triplicate of the pay roll of a Division Office are to be forwarded to the Maintenance Engineer. The Maintenance Engineer is to sign his approval on the back of each of the three copies of the pay roll, retain the triplicate and forward the original and duplicate to the Accounting Division.

Persons authorized to sign and approve pay rolls are:

Division Offices—Division Engineers and Division Office Engineers.
Construction Engineering Crews—Resident Engineer, Division Engineer.
Survey Parties—Locating Engineer, Division Engineer.

When omission of a required signature is made necessary by sickness, extended absence or other cause, the pay roll shall be accompanied by a letter explaining the circumstance.

*Early Submission of Pay Rolls Required*—The work of checking pay rolls and issuing pay checks in the Accounting Division is a task of considerable magnitude, and, for its expeditious performance, resident and locating engineers must submit their pay rolls to the Division Office not later than the 25th day of the month.

When pay rolls are submitted before the end of the month as above required, pay time for the days subsequent to submission is to be shown as anticipated. In case the actual time worked differs from that shown, particulars in regard to the change are to be forwarded to the Accounting Division, Salem, by night letter or telephone 4171, Extension 369, not later than the last day of the calendar month.

The persons by whom pay rolls are to be signed shall so arrange their schedules that they will be at their respective offices on the day or days that pay rolls are scheduled for submission, so that the pay rolls may be signed and forwarded without delay.

GENERAL PAY ROLL INSTRUCTIONS

In writing names of employees on the pay rolls, list the Department Head's name or list the Foreman's name first, then the names of his employees in alphabetical order. Write the given name first, then the initial only of the middle name, then the surname, thus—George R. Doe. Always write the name in the same manner correctly on each pay roll and do not abbreviate given names. In case an employee signs his middle name, write the initial only of the first name, then the middle name, then the surname, thus—T. John Roe.

In general, a separate pay roll is to be submitted for each crew. For small section maintenance crews and other crews, two or more crews may be included on a single pay roll sheet. In this case, each crew should be grouped separately with the foreman's name first.

To identify the pay roll, the name of the crew should be shown at the top of the first sheet.

The classification shown for an employee must be the classification which most nearly conforms with the duties actually performed. There must be no carrying of employees under classifications which do not correctly indicate the nature of the work performed.

The time of employees paid in part or in full by time check should be shown on the pay roll in exactly the same manner as the time of employees not time-checked, except that the time paid by time check must be shown on a separate line. Any additional time to be paid by regular pay check should be shown on the line below. Also, the number of the time statement and the number of the time check should be listed in the

columns provided for that purpose at the right hand end of the pay roll form.

The amounts earned by time-checked employees should be included in the pay roll totals and in the cost distribution the same as the amounts earned by employees not time-checked.

Deductions for industrial accident insurance, at the rate of one cent per day for each day worked, shall be made from all employees paid on an hourly or daily basis. Deduction at one cent per day is not to be made on vacation or sick leave time. For employees paid on a monthly or semi-monthly basis, the deduction shall be made at the rate of one cent per day straight time, Sundays and holidays included.

For employees holding membership in hospital associations, deductions shall be made each month in the lump sum of $2.50 without regard to the number of days worked. When such employees are paid on a semi-monthly basis, the $2.50 shall be deducted from the amount earned during the first half of the month, except in cases where the employee may not have worked during the first half of the month, in which cases the $2.50 shall be deducted from the amount earned during the second half of the month.

*Manner of Indicating Days or Hours Worked*—The regular pay time of monthly employees who have worked the full month should be indicated on the pay roll by writing the words "Full Month" or by marking with the symbol X all the days in the month, Sundays and holidays included.

The regular pay time for monthly employees who have worked fractional months may be indicated by marking with the symbol X all days, Sundays and holidays included, during the part of the month that they have worked, excepting, of course, any days on which, for any reason, they may not have been entitled to payment.

For employees working on an hourly or daily rate show the exact hours worked on the actual dates on which the work occurred.

*Overtime*—Overtime for monthly employees not exempted as explained in Article 4 a., should be shown on the pay roll by noting for each day the number of hours of pay overtime worked. This information should be entered on the line immediately below the line on which the regular time is indicated and should be clearly marked "Overtime."

Time for hourly employees should be shown on the pay roll by indicating the number of hours of regular time worked each day, and, on the line below, the number of hours of pay overtime worked. The line on which the overtime is shown should be clearly marked "Overtime."

The overtime rate for monthly employees shall be computed on the basis of 208 working hours per month (4 1/3 weeks at 48 hours per week). The hourly rate will, therefore, be the monthly rate divided by 208. It shall be extended to the nearest tenth of a cent. The double time rate will, of course, be twice the computed hourly rate.

Each pay roll on which overtime is allowed, shall be accompanied by a letter from the Engineer, Superintendent or other employee submitting the pay roll, explaining in full the necessity for the overtime work and the authority under which it was permitted. Except in extreme emergency, there shall be no overtime work.

**Article 4—Hours of Employment and Overtime**

a. *Exempted Employees*—Employees exempted from the provisions of the eight-hour law and who, therefore, may work more than eight hours per day without payment of overtime include (1) watchmen, (2) timekeepers, (3) foremen, (4) superintendents, (5) civil engineers, (6) supervisors, (7) inspectors, (8) checkers, and other employees whose duties consist of, or include, the supervising and directing of the work of other employees.

The term "civil engineers", as used herein, is understood to embrace all employees engaged in work of an engineering nature, including chainmen, rodmen, and computors, and office assistants in the Engineering Department.

The term "foremen," "superintendents" and "supervisors" are understood to embrace all employees, regardless of their classifications, having supervision over the work of one or more employees.

The term "inspector" is understood to embrace all employees engaged in inspection work, including weighmasters.

b. *Overtime Work to be Avoided*—Only in cases of extreme emergency shall an employee be required or permitted to work more than eight (8) hours in any one day or more than forty-eight (48) hours in any one calendar week.

Employees who may offer or who may voluntarily undertake to work more than eight hours in any one day shall be instructed not to

do so, and failure to comply with such instruction shall constitute cause for dismissal.

c. *Definitions and Explanations*—Time required by an employee in traveling between headquarters and the place of work, i. e., the office and the job, at the beginning and the end of the daily shift, shall be considered pay time, except in those cases where the job lies at considerable distance from headquarters and when, for the convenience of the employees, they are permitted to drive rather than move to a new headquarters location.

Performance of a few minutes of work after quitting time, in putting away tools and otherwise closing out the day's work, will not be considered overtime unless regularly required.

Work on a Sunday or a holiday, to an amount not exceeding eight hours, can be classed as work within regular hours, provided the total working time for the calendar week does not exceed forty-eight (48) hours. It is, therefore, suggested that when work on Sundays or holidays cannot be avoided, in order to reduce payment of overtime or to avoid exchange time, that the employee be allowed time off on other days of the same week to hold the total for the week below forty-eight (48) hours. (See "Exchange Time", Art. 2.)

Work on Saturday afternoon can be classed as work within regular hours, provided it does not increase the total for the day to more than eight (8) hours or the total for the week to more than forty-eight (48) hours.

Necessary work evenings and after hours can be taken care of, without payment of overtime, when anticipated, by giving a corresponding amount of time off during the regular working hours of the *same* day. Work in excess of eight (8) hours on one day cannot, however, be balanced by giving time off on another day, except in the case of employees entitled to exchange time.

The calendar week shall be understood to begin at midnight Saturday night.

d. *Payment of Overtime*—Whenever an employee is required or permitted to work more than eight (8) hours in one day or more than forty-eight (48) hours in one calendar week, the working time in excess of eight (8) hours or forty-eight (48) hours, as the case may be, shall be paid for as "overtime," except in the case of employees entitled to exchange time.

Pay time or overtime is to be computed to the nearest half hour. Fractional hours are to be indicated on the pay roll by the fraction 1/2. Other fractions or decimals are not to be used.

See Section 2, Article 3, for manner of showing overtime on the pay roll.

### Article 5—Instructions Applicable to All Classes of Absent Time

*Pay Rolls and Cost Distribution*—All absent time *for which payment is to be allowed,* in accordance with the foregoing provisions, shall be entered on the pay roll the same as working time.

Vacation leaves and sick leaves shall be charged on the pay roll against special "Service Accounts," the prefixes and account numbers to be used to be as stated in Section 2, Article 6.

Absences, other than vacation leaves and sick leaves, shall be charged to the work on which the employee is engaged at the time the absence occurs, using the work prefixes and account numbers the same as though the time had been working time.

*Certificates and Absent Time Statements*—The engineer or other person responsible for the preparation of a pay roll shall keep an accurate record of all absences from duty and shall sign, on the last sheet of all copies of each pay roll, the printed form of "Certificate of Absent Time," in which he certifies, (1) that no absent time is included in the pay roll as pay time, or (2) that no absent time is included as pay time on the pay roll other than that shown on the Statement of Absent Time (Form A-58), which he will submit as hereinafter provided, and that the absent time included as pay time on the pay roll is not in excess of the accumulated absent time credits of the respective employees.

In affixing the signature on the certificate of absent time, sign only that portion which correctly describes the conditions applying to the particular pay roll.

When absent time is included in any pay roll, there shall be submitted for that pay roll a "Statement of Absent Time," covering absent time of hourly rate employees, as well as monthly rate employees. This statement shall be prepared on Form No. A-58.

The duplicate copy shall be retained by the person who prepares the pay roll; the original copy shall be sent to the Accounting Division, as follows:

(a) For pay rolls which are forwarded to the Accounting Division before the end of the month, as is the case with administrative and engineering pay rolls, the

absent time statement (Form A-58) shall be prepared and forwarded the last day of the month.

(b) For pay rolls forwarded on or after the last day of the month, the absent time statement (Form A-58) shall be submitted with the pay roll.

No wage or salary payment will be made by the Accounting Division until the absent time statement applicable thereto is received and checked. Any allowance of pay for leave time to which the employee is not entitled will be deducted before the pay check is forwarded.

The certificate of absent time, as printed on the pay roll form, and the statement of absent time on Form A-58 are to bear signatures as follows:

Kind of crew—
Resident Engineer's crew
Locating Engineer's crew

Signature required on statement of absent time—
Resident Engineer
Locating Engineer

Signatures required on certificate of absent time (Form A-58)—
Resident Engineer and
Division Engineer
Locating Engineer and
Division Engineer

*Recording and Reporting of Absences*—As the equitable application of the Department's policies with reference to vacations, sick leaves, and other absences is dependent upon an infallible recording and reporting of absences, each person responsible for the preparation and submission of a pay roll shall put into operation a system of obtaining and recording information in regard to absences which will enable him to report every absence accurately and under the proper classification. Failure to so report an absence shall be looked upon as an offense quite as serious as the payment of persons for service not rendered, and such failure shall be cause for the dismissal of the person responsible for the failure.

It is suggested that a record of absences be kept on a standard pay roll form or in a monthly time book, and that entries be made in this record daily to insure accuracy. A file of copies of the "Statements of Absent Time" will provide the needed record of leaves taken.

*Definition of Non-work Day*—The term non-work day as used herein shall be understood to be a day on which the employee, under his regular working schedule, is not expected to work. For most employees Sundays and holidays are non-work days. For most employees working on a 44-hour work-week basis, Saturday afternoon is non-work time.

*Computation of Leave Credits*—In the computing of vacation leave credits and sick leave credits, all time that the employee is absent on authorized leave with pay may be included as time worked.

If a vacation leave or a sick leave being taken runs far enough into the month to entitle the employee to a day of credit for that month, the day of credit may be utilized in the leave then being taken.

*Leave Credits to be Checked Before Allowance*—To avoid misunderstanding and disappointment to the employee, the Department Head or other supervisory employee in charge should, before permitting any leave, check with the Accounting Division at Salem as to the eligibility of the employee for the leave and as to the amount of leave time to which the employee is entitled. Persons authorized to issue time statements and field checks are cautioned particularly against allowing payment for leave time without first checking with the Accounting Division, as any erroneous payment for leave time will have to be made good by the person issuing the time statement.

### Article 6—Accounting Procedure, Vacations and Sick Leave

*Charges for Vacation Leaves Taken*—Charges for vacation leaves taken will be handled on the pay rolls and in the pay roll summaries in the same manner as charges for working time, except that vacation leave time will be charged to the special vacations account under the item designated "Vacation leave taken." The prefixes and function numbers to be used in charging vacation leave time taken are as follows:

1. Pay rolls of Maintenance Department, including shop and maintenance offices, oiling crews, paving crews, and extra gangs ..... 8001–568
2. Pay rolls of survey parties and construction engineering crews 8011–568
3. Pay rolls of all other departments and crews ..... 8021–568

In the detail of the pay roll, the days or hours of vacation leave time taken by an employee are to be entered the same as other pay time of the same employee, using a separate line, of course, to show proper segregation of cost.

The amount due an employee for vacation leave taken shall be included in the amount shown in the "gross amount earned" column.

*Means of Reflecting Vacations Costs in Cost of Projects and Work Units*—In order that the expense of giving vacations may be properly reflected in the costs of projects and other work units, a monthly charge will be made against each project and work unit and a corresponding credit will be made to the special vacations account above referred to. The amount of the monthly charge and of the corresponding credit will be determined from the pay rolls at the time the pay rolls are prepared, and both the charge and the credit will be shown in the pay roll cost summary and the pay roll distribution sheet. The amount of the charge and of the corresponding credit will, in each case, be a percentage of the amount of pay roll charged to the project or work unit.

The percentage rate to be used in computing the charges and credits, and the manner in which the charges and credits are to be shown in the pay roll cost summaries and distribution sheets, will be as described hereinafter under appropriate subheadings.

The charges to projects and work units will hereinafter be referred to as "vacation percentage charges." The credits to the special vacations account will be referred to as "credits to vacations and sick leave account."

*Charges for Sick Leave Taken*—Charges for sick leave taken will be handled on the pay rolls and in the pay roll summaries in the same manner as charges for working time, except that sick leave time will be charged to the special sick leave accounts under the item designation "Sick Leave Taken." The prefixes and function numbers to be used in charging sick leave taken are as follows:

1. Pay rolls of Maintenance Department, including shop and maintenance offices, oiling crews, paving crews, and extra gangs ..... 8101–568
2. Pay rolls of survey parties and construction engineering crews ..... 8111–568
3. Pay rolls of all other departments and crews ..... 8121–568

In the detail of the pay roll, the days or hours of sick leave time taken by an employee are to be entered the same as other pay time of the same employee, using a separate line, of course, to show proper segregation of cost. The amount due an employee for sick leave taken shall be included in the amount shown in the "Gross Amount Earned" column.

*Means of Reflecting Sick Leave Costs in Cost of Projects and Work Units*—The expense of sick leaves will be reflected in the costs of projects and work units by a procedure the same as hereinbefore described for vacations.

*Percentage Rates to be Used*—The percentage rates to be used in determining the amounts of "vacation percentage charges," and "sick leave percentage charges," to be made against the work by adding to the charge items in the pay roll cost summaries, will be subject to change from year to year. The percentages to be used until further notice are as shown below:

| | *Vacation Percentage* | *Sick Leave Percentage* | *Combined Percentage* |
|---|---|---|---|
| 1. Pay rolls of Maintenance Department including shop and maintenance offices, oiling crews, paving crews, and extra gangs | 4.5% | 3.0% | 7.5% |
| 2. Pay rolls of survey parties and construction engineering crews | 4.5% | 1.5% | 6.0% |
| 3. Pay rolls of all other departments and crews | 5.0% | 2.0% | 7.0% |

The vacation and sick leave percentage charges are to be computed as one amount on the pay roll summaries, and pay roll distribution sheets, using the above combined percentages, and the total thus computed is to be shown opposite "Credit vacations and sick leave account" at the bottom of the pay roll summaries, and pay roll distribution sheets.

Vacation leave taken and sick leave taken, are to be shown separately.

The above stated percentages include an allowance to cover the employer's portion of industrial accident insurance applicable to such leave time.

*Prefixes to be Used for Credits to Vacation and Sick Leave Accounts*—The prefixes and

function numbers to which the "credit vacations and sick leave account" are to be credited are as follows:

| | *Credit Vacations and Sick Leave Account* |
|---|---|
| 1. Pay rolls of Maintenance Department, including shop and maintenance offices, oiling crews, paving crews, and extra gangs | 8001–598 |
| 2. Pay rolls of survey parties and construction engineering crews | 8011–598 |
| 3. Pay rolls of all other departments and crews | 8021–598 |

*No Percentage Charge to be Made on Vacation and Sick Leave Time*—The percentage charges for vacations and sick leave are to be made against all charge items in the pay roll, except charges for "vacation leave taken" and "sick leave taken." No percentage is to be added on these two particular kinds of charges.

*Industrial Accident Insurance on Vacation Leave Time and Sick Leave Time*—In determining the amounts to be deducted on the pay roll for the employee's contributions to the Industrial Accident Insurance Fund, no deduction should be included for the days that an employee is absent on vacation leave, or on sick leave.

*Cost Distribution for Sundays and Holidays Occurring in Vacation or Sick Leave Periods*—In the case of monthly rate employees, non-work days occurring immediately before, or at the beginning of a vacation or sick leave, are not to be charged as a part of the vacation or sick leave time. For such non-work days, the charge is to be made against the work on which the employee was engaged immediately prior to the leave. Non-work days occurring midway in the vacation leave period or sick leave period, or at the end of the leave period, shall be included with the time to be charged to the "vacations account" or "sick leave account."

Non-work days shall be understood to include Sundays and holidays, and other time, if any, such as Saturday afternoons, which is not regular work time under the pay roll concerned.

The charging of vacation leave time to the "vacations account," or the charging of sick leave to the "sick leave account," shall begin with the first regular working day of the leave period, and not earlier.

*Pay Allowance*—The pay time to be allowed an hourly rate employee while on vacation leave or sick leave shall be the same number of hours per day and the same number of days per week (holidays excepted) as are in the employee's regular working schedule at the time the leave is taken, with the proviso, however, that if the regular working schedule includes any overtime, or time in excess of eight hours per day or 48 hours per week, such overtime and excess time shall be excluded from the vacation pay time, or the sick leave time.

The rate of pay to be allowed an employee while on vacation leave shall be the same as would be allowed him during the same period if he worked, or such higher rate, if any, as the employee may have been paid by the Department for a period not shorter than eight weeks (or the equivalent thereof in days or work-hours), during the expired portion of the current calendar year, except as follows:

> If the rate of pay to be allowed, as specified in the above paragraph, is a monthly rate based on a work-week longer than 48 hours, the rate of pay to be allowed shall be the corresponding rate based on a work-week of 48 hours.

The rate of pay to be allowed an employee while on sick leave shall be the same as would be allowed him during the same period if he worked, except that if the rate of pay is a monthly rate based on a work-week longer than 48 hours, the rate of pay to be allowed shall be the corresponding rate based on a work-week of 48 hours.

## LOST TIME OCCASIONED BY INJURY

Persons responsible for the preparation of the report of injury to the State Industrial Accident Commission, are to forward a copy of each report to the Accounting Division. (See Sec. 3, Art. 7.)

The compensation made to the employee by the Accident Commission for time lost on account of injury, will cover the full period of injury, when such injury occurs in line of duty, regardless of any sick leave allowance that may be made to the employee by the Highway Department.

*Checks Issued by Accident Commission*—Copies of all checks issued by the Accident Commission as compensation for lost time resulting from injury, will be forwarded by the Accident Commission directly to the Accounting Division. The details of the checks will be recorded, and the data will be used as a basis for the computa-

tion of pay time of the employee in cases where the lost time is applied to sick leave credits.

*Pay Roll Covering Period of Injury*—The time lost by an employee by reason of injury while in line of duty will be charged as pay time and be applied against an employee's sick leave credit. Such employee shall be carried on the regular pay roll to within the nearest half-day of the time of injury. *From the time of injury until he returns to work, or until his sick leave credit is exhausted, the employee shall be carried on a separate pay roll at his regular rate to the extent of his sick leave credit* during the period of injury, as explained hereinafter. The amount paid the employee by the Accident Commission will be deducted by the Accounting Division from the pay time shown on the separate pay rolls thus submitted.

*Charging for Sick Leave in Injury Cases*—In the case of sick leave absence occasioned by injury in the line of duty, the charge against the employee's accumulation of sick leave credit will be made at only one-half the usual rate. That is, the charge will be made at the rate of only one-half day for each regular working day of absence. This reduction is made for the reason that in absences of that kind, the Highway Department pays only a part of the employee's compensation.

In the event that the number of days of pay time to be charged to the employee's sick leave credit, as computed under the foregoing provision, is in excess of the employee's sick leave credit, the employee is to be removed from the pay roll at the time that the sick leave credit has been completely used. In case the employee is reemployed following his period of lost time occasioned by injury, he is to be reinstated on the pay roll on the date he returns to work.

*Employees Having No Sick Leave Credit*—An employee who has no accumulated sick leave credit at the time of injury while on duty shall be removed from the pay roll as of the date and hour of the injury. In case the employee is reemployed following his period of lost time occasioned by injury, he is to be reinstated on the pay roll on the date he returns to work.

*Pay Roll Procedure*—The following changes are to be made in the usual pay roll procedure, to report lost time of employees injured while in line of duty, when such time is to be applied to sick leave credits:

1. In the case of a monthly rate employee carried on a monthly rate pay roll, a separate pay roll and a separate statement of absent time are to be submitted for the period from the time of injury (to the nearest half day) to the time such employee returns to work, or until his sick leave credit has been exhausted.
2. In the case of an employee who is carried on an hourly rate pay roll, except as provided in the next sentence, a separate foreman's weekly time report, a separate pay roll, a separate statement of absent time, and a separate pay roll distribution sheet are to be submitted for the period as explained in "1" above. In the case of a repair shop employee who is carried on an hourly rate pay roll, a separate foreman's weekly time report and a separate pay roll distribution sheet are not required.
3. The following figures will be computed by the Accounting Division, and are not to be indicated by the field offices:
   a. The amount earned, on the foreman's weekly time report covering time lost on account of injury.
   b. The gross amount earned, and the net amount due, on the pay rolls covering time lost on account of injury.

The Accounting Division will advise the field offices as to the amount charged to the jobs when the special pay rolls are completed.

## EXCHANGE TIME

In accordance with the provisions of Section 2, Article 2, exchange time worked is to be reported on Form A-220, "Report of Exchange Time Worked." One report is to be prepared for each pay roll on which employees, having worked exchange time, are listed. The report is to be prepared in the same number of copies, and the copies are to be signed, approved and forwarded in the same manner, as the Statement of Absent Time (Form A-58), described in Section 2, Article 5. In reporting the amount of exchange time worked, the number of hours only is to be shown; do not show the number of days.

Exchange time leave is to be reported on Form A-58, "Statement of Absent Time," as explained in Article 5, herein.

## GENERAL INSTRUCTIONS

*Statement of Absent Time*—In the event that different types of absences of one employee run concurrently, each type of absence and the corresponding dates of each type of absence are to be shown on separate lines on the "Statement of Absent Time," Form A-58.

The number of hours exchange time leave is to be shown in the column "Exch. Time Leave."

*Documents to be Submitted with Pay Roll*—The following documents pertaining to absent time are to be submitted with the pay roll:

1. Statement of Absent Time.
2. Report of Exchange Time Worked.
3. Physician's Certificate for sick leave taken in excess of seven days.
4. Letter of explanation supporting extra vacation leave taken.

### Article 7—Accounting Procedure for Withholding Tax Deductions

*Record of Employees Exemption Status*—Each employee is required to submit to the person responsible for preparing the pay roll, his marital and dependency status, on form W-4 (Rev. 1944), which is the form supplied by the Internal Revenue Service. The person responsible for preparing the pay roll shall record the exemption of each of his employees in a memorandum record containing the name of the employe and his exemption status in accordance with the following code:

| | *Code Number* |
|---|---|
| Person claiming: | |
| No exemption | 0 |
| One exemption | I |
| Two exemptions | II |
| Three exemptions | III |
| (Etc. to ten) | (Etc. to X) |

This code is to be shown on the pay roll and therefore is in Roman numerals in order to differentiate it from the figures pertaining to the amount of pay.

Employees who fail to submit form W-4 (Rev. 1944), to the person responsible for preparing the pay roll, will not be entitled to any exemption, and the withholding tax in that event is to be computed on the whole of the gross income until the exemption certificate is submitted.

In the event that the exemption status of an employee changes at any time, a new exemption certificate must be submitted by the employee. The new exemption is to take effect as of the beginning of the pay roll period during which the certificate is submitted to the person responsible for preparing the pay roll.

*Exemption Code to be Shown on Pay Roll*—In order that the amount of withholding tax shown as a deduction on the pay roll may be audited by the Accounting Division, the person preparing the pay roll is to enter the exemption code of each employee, alongside of the amount of tax deducted on the pay roll.

*Tax to be Deducted on Pay Rolls*—The amount of the withholding tax computed on the salary or wage of an employee of the Highway Department is to be shown as a deduction on the pay roll in the column headed "Federal Tax." The tax to be deducted from the employee's pay is to be computed from the tax tables H-4, or H-5. The headings of the columns in the tax tables have been coded to correspond with the code set forth herein.

The tax of an employee is to be computed from Table H-4, except when the employee is within one of the following groups:

1. Employees who are paid on a semi-monthly pay roll.
2. Employees who are transferred from one pay roll to another pay roll during the month.
3. New employees who commence work later than the first working day of the month.
4. Employees whose services with the Department are terminated prior to the close of the last working day of the month.

When an employee falls within one of the four groups shown above, the withholding tax to be deducted on the pay roll shall be the amount of tax shown in Table H-5 for the average daily rate earned over the period covered by the pay roll, including Sundays and holidays, and other days of absence during the period, multiplied by the total number of days included in the pay period. The total number of days used as the multiplier must be shown on the pay roll in the blank column next to the tax column.

Withholding tax deductions are to be made from all persons employed, regardless of classification or length of employment. The term "Wages" as used in the tables is to be understood to be the "Total Gross Earnings" for the month.

*Withholding Tax Not Applicable to Compensation for Injuries*—Inasmuch as the compensation paid by the State Accident Commission for time lost on account of injury is a return of premium paid for insurance, no withholding tax is to be levied against compensation received by an employee from the Accident Commission. For simplicity, however, the withholding tax deduction shall be figured on the net amount paid the employee on the Highway Department pay roll.

If the employee is shown on the pay roll for the entire monthly pay period, the tax is to be computed from Table H-4. Where fractional months are involved, the tax should be computed on the basis of Table H-5 for the total number of days the employee is shown on the pay roll, including Sundays, holidays, and other absences, as previously explained herein.

*Exemption Code for Employees Transferred* —In the event that an employee is transferred from one crew or office to another crew or office, the person preparing the Notice of Transfer of Employees, Form A-90, is to indicate the employee's withholding tax exemption code on the Notice of Transfer, in the space with the rate of pay.

# TABLE OF WITHHOLDING TAXES

TABLE H-4

## For Monthly Pay Period

| Wages | | Number of Exemptions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| At least | But less than | O | I | II | III | IV | V | VI | VII | VIII | IX | X or more |
| $ 0 | $ 44 | 17% of wages | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... |
| 44 | 48 | $ 7.90 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 48 | 52 | 8.60 | .60 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 52 | 56 | 9.20 | 1.30 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 56 | 60 | 9.90 | 2.00 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 60 | 64 | 10.60 | 2.70 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 64 | 68 | 11.30 | 3.40 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 68 | 72 | 12.00 | 4.10 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 72 | 76 | 12.70 | 4.70 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 76 | 80 | 13.30 | 5.40 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 80 | 84 | 14.00 | 6.10 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 84 | 88 | 14.70 | 6.80 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 88 | 92 | 15.40 | 7.50 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 92 | 96 | 16.10 | 8.20 | .20 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 96 | 100 | 16.80 | 8.80 | .90 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 100 | 104 | 17.40 | 9.50 | 1.60 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 104 | 108 | 18.10 | 10.20 | 2.30 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 108 | 112 | 18.80 | 10.90 | 3.00 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 112 | 116 | 19.50 | 11.60 | 3.70 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 116 | 120 | 20.20 | 12.30 | 4.30 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 120 | 124 | 20.90 | 12.90 | 5.00 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 124 | 128 | 21.50 | 13.60 | 5.70 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 128 | 132 | 22.20 | 14.30 | 6.40 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 132 | 136 | 22.90 | 15.00 | 7.10 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 136 | 140 | 23.60 | 15.70 | 7.80 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 140 | 144 | 24.30 | 16.40 | 8.40 | .50 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 144 | 148 | 25.00 | 17.00 | 9.10 | 1.20 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 148 | 152 | 25.70 | 17.70 | 9.80 | 1.90 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 152 | 156 | 26.30 | 18.40 | 10.50 | 2.60 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 156 | 160 | 27.00 | 19.10 | 11.20 | 3.30 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 160 | 164 | 27.70 | 19.80 | 11.90 | 4.00 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 164 | 168 | 28.40 | 20.50 | 12.60 | 4.60 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 168 | 172 | 29.10 | 21.20 | 13.20 | 5.30 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 172 | 176 | 29.80 | 21.80 | 13.90 | 6.00 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 176 | 180 | 30.40 | 22.50 | 14.60 | 6.70 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 180 | 184 | 31.10 | 23.20 | 15.30 | 7.40 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 184 | 188 | 31.80 | 23.90 | 16.00 | 8.10 | .10 | ..... | ..... | ..... | ..... | ..... | ..... |
| 188 | 192 | 32.60 | 24.60 | 16.70 | 8.70 | .80 | ..... | ..... | ..... | ..... | ..... | ..... |
| 192 | 196 | 33.30 | 25.30 | 17.30 | 9.40 | 1.50 | ..... | ..... | ..... | ..... | ..... | ..... |
| 196 | 200 | 34.10 | 25.90 | 18.00 | 10.10 | 2.20 | ..... | ..... | ..... | ..... | ..... | ..... |
| 200 | 204 | 34.80 | 26.60 | 18.70 | 10.80 | 2.90 | ..... | ..... | ..... | ..... | ..... | ..... |
| 204 | 208 | 35.60 | 27.30 | 19.40 | 11.50 | 3.60 | ..... | ..... | ..... | ..... | ..... | ..... |
| 208 | 212 | 36.30 | 28.00 | 20.10 | 12.20 | 4.20 | ..... | ..... | ..... | ..... | ..... | ..... |
| 212 | 216 | 37.10 | 28.70 | 20.80 | 12.80 | 4.90 | ..... | ..... | ..... | ..... | ..... | ..... |
| 216 | 220 | 37.80 | 29.40 | 21.40 | 13.50 | 5.60 | ..... | ..... | ..... | ..... | ..... | ..... |
| 220 | 224 | 38.60 | 30.00 | 22.10 | 14.20 | 6.30 | ..... | ..... | ..... | ..... | ..... | ..... |
| 224 | 228 | 39.30 | 30.70 | 22.80 | 14.90 | 7.00 | ..... | ..... | ..... | ..... | ..... | ..... |
| 228 | 232 | 40.10 | 31.40 | 23.50 | 15.60 | 7.70 | ..... | ..... | ..... | ..... | ..... | ..... |
| 232 | 236 | 40.80 | 32.10 | 24.20 | 16.30 | 8.30 | .40 | ..... | ..... | ..... | ..... | ..... |
| 236 | 240 | 41.60 | 32.90 | 24.90 | 16.90 | 9.00 | 1.10 | ..... | ..... | ..... | ..... | ..... |
| 240 | 248 | 42.70 | 34.00 | 25.90 | 18.00 | 10.10 | 2.10 | ..... | ..... | ..... | ..... | ..... |
| 248 | 256 | 44.20 | 35.50 | 27.30 | 19.30 | 11.40 | 3.50 | ..... | ..... | ..... | ..... | ..... |
| 256 | 264 | 45.70 | 37.00 | 28.60 | 20.70 | 12.80 | 4.90 | ..... | ..... | ..... | ..... | ..... |
| 264 | 272 | 47.20 | 38.50 | 30.00 | 22.10 | 14.20 | 6.20 | ..... | ..... | ..... | ..... | ..... |
| 272 | 280 | 48.70 | 40.00 | 31.40 | 23.40 | 15.50 | 7.60 | ..... | ..... | ..... | ..... | ..... |
| 280 | 288 | 50.20 | 41.50 | 32.80 | 24.80 | 16.90 | 9.00 | 1.10 | ..... | ..... | ..... | ..... |
| 288 | 296 | 51.80 | 43.00 | 34.30 | 26.20 | 18.30 | 10.30 | 2.40 | ..... | ..... | ..... | ..... |
| 296 | 304 | 53.30 | 44.50 | 35.80 | 27.60 | 19.60 | 11.70 | 3.80 | ..... | ..... | ..... | ..... |
| 304 | 312 | 54.80 | 46.10 | 37.30 | 28.90 | 21.00 | 13.10 | 5.20 | ..... | ..... | ..... | ..... |
| 312 | 320 | 56.30 | 47.60 | 38.90 | 30.30 | 22.40 | 14.50 | 6.50 | ..... | ..... | ..... | ..... |
| 320 | 328 | 57.80 | 49.10 | 40.40 | 31.70 | 23.70 | 15.80 | 7.90 | ..... | ..... | ..... | ..... |
| 328 | 336 | 59.30 | 50.60 | 41.90 | 33.20 | 25.10 | 17.20 | 9.30 | 1.40 | ..... | ..... | ..... |
| 336 | 344 | 60.80 | 52.10 | 43.40 | 34.70 | 26.50 | 18.60 | 10.60 | 2.70 | ..... | ..... | ..... |
| 344 | 352 | 62.30 | 53.60 | 44.90 | 36.20 | 27.80 | 19.90 | 12.00 | 4.10 | ..... | ..... | ..... |
| 352 | 360 | 63.80 | 55.10 | 46.40 | 37.70 | 29.20 | 21.30 | 13.40 | 5.50 | ..... | ..... | ..... |
| 360 | 368 | 65.30 | 56.60 | 47.90 | 39.20 | 30.60 | 22.70 | 14.70 | 6.80 | ..... | ..... | ..... |
| 368 | 376 | 66.80 | 58.10 | 49.40 | 40.70 | 32.00 | 24.00 | 16.10 | 8.20 | .30 | ..... | ..... |
| 376 | 384 | 68.30 | 59.60 | 50.90 | 42.20 | 33.50 | 25.40 | 17.50 | 9.60 | 1.60 | ..... | ..... |
| 384 | 392 | 69.80 | 61.10 | 52.40 | 43.70 | 35.00 | 26.80 | 18.80 | 10.90 | 3.00 | ..... | ..... |
| 392 | 400 | 71.30 | 62.60 | 53.90 | 45.20 | 36.50 | 28.10 | 20.20 | 12.30 | 4.40 | ..... | ..... |
| 400 | 420 | 73.90 | 65.20 | 56.50 | 47.80 | 39.10 | 30.50 | 22.60 | 14.70 | 6.80 | ..... | ..... |
| 420 | 440 | 77.70 | 69.00 | 60.30 | 51.60 | 42.90 | 34.20 | 26.00 | 18.10 | 10.20 | 2.30 | ..... |
| 440 | 460 | 81.50 | 72.80 | 64.10 | 55.30 | 46.60 | 37.90 | 29.50 | 21.50 | 13.60 | 5.70 | ..... |
| 460 | 480 | 85.20 | 76.50 | 67.80 | 59.10 | 50.40 | 41.70 | 33.00 | 25.00 | 17.00 | 9.10 | 1.20 |
| 480 | 500 | 89.00 | 80.30 | 71.60 | 62.90 | 54.20 | 45.50 | 36.70 | 28.40 | 20.50 | 12.50 | 4.60 |
| 500 | 520 | 92.80 | 84.10 | 75.30 | 66.60 | 57.90 | 49.20 | 40.50 | 31.80 | 23.90 | 16.00 | 8.00 |
| 520 | 540 | 96.50 | 87.80 | 79.10 | 70.40 | 61.70 | 53.00 | 44.30 | 35.60 | 27.30 | 19.40 | 11.50 |
| 540 | 560 | 100.30 | 91.60 | 82.90 | 74.20 | 65.50 | 56.70 | 48.00 | 39.30 | 30.70 | 22.80 | 14.90 |
| 560 | 580 | 104.00 | 95.30 | 86.60 | 77.90 | 69.20 | 60.50 | 51.80 | 43.10 | 34.40 | 26.20 | 18.30 |
| 580 | 600 | 107.80 | 99.10 | 90.40 | 81.70 | 73.00 | 64.30 | 55.60 | 46.90 | 38.10 | 29.60 | 21.70 |
| 600 | 640 | 113.40 | 104.70 | 96.00 | 87.30 | 78.60 | 69.90 | 61.20 | 52.50 | 43.80 | 35.10 | 26.90 |

# TABLE OF WITHHOLDING TAXES

TABLE H-5

## For Miscellaneous Pay Period

| Average daily wages for pay period | | Number of Exemptions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| At least | But less than | O | I | II | III | IV | V | VI | VII | VIII | IX | X or more |
| $ 0.00 | $ 1.50 | 17% of wages | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... | $ ..... |
| 1.50 | 1.75 | $ .30 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 1.75 | 2.00 | .30 | .05 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 2.00 | 2.25 | .35 | .10 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 2.25 | 2.50 | .40 | .15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 2.50 | 2.75 | .45 | .20 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 2.75 | 3.00 | .50 | .25 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 3.00 | 3.25 | .55 | .25 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 3.25 | 3.50 | .60 | .30 | .05 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 3.50 | 3.75 | .60 | .35 | .10 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 3.75 | 4.00 | .65 | .40 | .15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 4.00 | 4.25 | .70 | .45 | .20 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 4.25 | 4.50 | .75 | .50 | .25 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 4.50 | 4.75 | .80 | .55 | .25 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 4.75 | 5.00 | .85 | .55 | .30 | .05 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 5.00 | 5.25 | .90 | .60 | .35 | .10 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 5.25 | 5.50 | .90 | .65 | .40 | .15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 5.50 | 5.75 | .95 | .70 | .45 | .20 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 5.75 | 6.00 | 1.00 | .75 | .50 | .20 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 6.00 | 6.25 | 1.05 | .80 | .55 | .25 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 6.25 | 6.50 | 1.10 | .85 | .55 | .30 | .05 | ..... | ..... | ..... | ..... | ..... | ..... |
| 6.50 | 6.75 | 1.15 | .85 | .60 | .35 | .10 | ..... | ..... | ..... | ..... | ..... | ..... |
| 6.75 | 7.00 | 1.20 | .90 | .65 | .40 | .15 | ..... | ..... | ..... | ..... | ..... | ..... |
| 7.00 | 7.25 | 1.25 | .95 | .70 | .45 | .20 | ..... | ..... | ..... | ..... | ..... | ..... |
| 7.25 | 7.50 | 1.30 | 1.00 | .75 | .50 | .20 | ..... | ..... | ..... | ..... | ..... | ..... |
| 7.50 | 7.75 | 1.35 | 1.05 | .80 | .50 | .25 | ..... | ..... | ..... | ..... | ..... | ..... |
| 7.75 | 8.00 | 1.40 | 1.10 | .85 | .55 | .30 | .05 | ..... | ..... | ..... | ..... | ..... |
| 8.00 | 8.25 | 1.40 | 1.15 | .85 | .60 | .35 | .10 | ..... | ..... | ..... | ..... | ..... |
| 8.25 | 8.50 | 1.45 | 1.20 | .90 | .65 | .40 | .15 | ..... | ..... | ..... | ..... | ..... |
| 8.50 | 8.75 | 1.50 | 1.25 | .95 | .70 | .45 | .15 | ..... | ..... | ..... | ..... | ..... |
| 8.75 | 9.00 | 1.55 | 1.30 | 1.00 | .75 | .50 | .20 | ..... | ..... | ..... | ..... | ..... |
| 9.00 | 9.25 | 1.60 | 1.35 | 1.05 | .80 | .50 | .25 | ..... | ..... | ..... | ..... | ..... |
| 9.25 | 9.50 | 1.65 | 1.35 | 1.10 | .80 | .55 | .30 | .05 | ..... | ..... | ..... | ..... |
| 9.50 | 9.75 | 1.70 | 1.40 | 1.15 | .85 | .60 | .35 | .10 | ..... | ..... | ..... | ..... |
| 9.75 | 10.00 | 1.75 | 1.45 | 1.20 | .90 | .65 | .40 | .15 | ..... | ..... | ..... | ..... |
| 10.00 | 10.50 | 1.80 | 1.55 | 1.25 | .95 | .70 | .45 | .20 | ..... | ..... | ..... | ..... |
| 10.50 | 11.00 | 1.90 | 1.65 | 1.35 | 1.05 | .80 | .55 | .30 | ..... | ..... | ..... | ..... |
| 11.00 | 11.50 | 2.00 | 1.75 | 1.45 | 1.15 | .90 | .60 | .35 | .10 | ..... | ..... | ..... |
| 11.50 | 12.00 | 2.10 | 1.80 | 1.55 | 1.25 | .95 | .70 | .45 | .20 | ..... | ..... | ..... |
| 12.00 | 12.50 | 2.20 | 1.90 | 1.65 | 1.35 | 1.05 | .80 | .55 | .25 | ..... | ..... | ..... |
| 12.50 | 13.00 | 2.30 | 2.00 | 1.70 | 1.45 | 1.15 | .90 | .60 | .35 | .10 | ..... | ..... |
| 13.00 | 13.50 | 2.40 | 2.10 | 1.80 | 1.55 | 1.25 | .95 | .70 | .45 | .20 | ..... | ..... |
| 13.50 | 14.00 | 2.50 | 2.20 | 1.90 | 1.60 | 1.35 | 1.05 | .80 | .55 | .25 | ..... | ..... |
| 14.00 | 14.50 | 2.60 | 2.30 | 2.00 | 1.70 | 1.45 | 1.15 | .90 | .60 | .35 | .10 | ..... |
| 14.50 | 15.00 | 2.65 | 2.40 | 2.10 | 1.80 | 1.50 | 1.25 | .95 | .70 | .45 | .20 | ..... |
| 15.00 | 15.50 | 2.75 | 2.50 | 2.20 | 1.90 | 1.60 | 1.35 | 1.05 | .80 | .55 | .25 | ..... |
| 15.50 | 16.00 | 2.85 | 2.55 | 2.30 | 2.00 | 1.70 | 1.45 | 1.15 | .85 | .60 | .35 | .10 |
| 16.00 | 16.50 | 2.95 | 2.65 | 2.40 | 2.10 | 1.80 | 1.50 | 1.25 | .95 | .70 | .45 | .20 |
| 16.50 | 17.00 | 3.05 | 2.75 | 2.45 | 2.20 | 1.90 | 1.60 | 1.35 | 1.05 | .80 | .50 | .25 |
| 17.00 | 17.50 | 3.15 | 2.85 | 2.55 | 2.30 | 2.00 | 1.70 | 1.40 | 1.15 | .85 | .60 | .35 |
| 17.50 | 18.00 | 3.25 | 2.95 | 2.65 | 2.40 | 2.10 | 1.80 | 1.50 | 1.25 | .95 | .70 | .45 |
| 18.00 | 18.50 | 3.35 | 3.05 | 2.75 | 2.45 | 2.20 | 1.90 | 1.60 | 1.30 | 1.05 | .80 | .50 |
| 18.50 | 19.00 | 3.40 | 3.15 | 2.85 | 2.55 | 2.30 | 2.00 | 1.70 | 1.40 | 1.15 | .85 | .60 |
| 19.00 | 19.50 | 3.50 | 3.25 | 2.95 | 2.65 | 2.35 | 2.10 | 1.80 | 1.50 | 1.25 | .95 | .70 |
| 19.50 | 20.00 | 3.60 | 3.30 | 3.05 | 2.75 | 2.45 | 2.20 | 1.90 | 1.60 | 1.30 | 1.05 | .75 |
| 20.00 | 21.00 | 3.75 | 3.45 | 3.20 | 2.90 | 2.60 | 2.30 | 2.05 | 1.75 | 1.45 | 1.20 | .90 |
| 21.00 | 22.00 | 3.95 | 3.65 | 3.35 | 3.10 | 2.80 | 2.50 | 2.20 | 1.95 | 1.65 | 1.35 | 1.10 |
| 22.00 | 23.00 | 4.15 | 3.85 | 3.55 | 3.25 | 3.00 | 2.70 | 2.40 | 2.10 | 1.85 | 1.55 | 1.25 |
| 23.00 | 24.00 | 4.30 | 4.05 | 3.75 | 3.45 | 3.15 | 2.90 | 2.60 | 2.30 | 2.05 | 1.75 | 1.45 |
| 24.00 | 25.00 | 4.50 | 4.20 | 3.95 | 3.65 | 3.35 | 3.05 | 2.80 | 2.50 | 2.20 | 1.95 | 1.65 |
| 25.00 | 26.00 | 4.70 | 4.40 | 4.10 | 3.85 | 3.55 | 3.25 | 2.95 | 2.70 | 2.40 | 2.10 | 1.85 |
| 26.00 | 27.00 | 4.90 | 4.60 | 4.30 | 4.00 | 3.75 | 3.45 | 3.15 | 2.90 | 2.60 | 2.30 | 2.00 |
| 27.00 | 28.00 | 5.05 | 4.80 | 4.50 | 4.20 | 3.90 | 3.65 | 3.35 | 3.05 | 2.80 | 2.50 | 2.20 |
| 28.00 | 29.00 | 5.25 | 4.95 | 4.70 | 4.40 | 4.10 | 3.80 | 3.55 | 3.25 | 2.95 | 2.70 | 2.40 |
| 29.00 | 30.00 | 5.45 | 5.15 | 4.85 | 4.60 | 4.30 | 4.00 | 3.75 | 3.45 | 3.15 | 2.85 | 2.60 |

### Article 8—Time Statements

a. *Persons Authorized to Issue Time Statements*—The persons by whom time statements may be issued and the offices authorized to make payment on the time statements issued by such persons are as follows:

| *Persons Authorized to Issue Time Statements* | *Office Authorized to Make Payment* |
|---|---|
| Resident Engineers | Division Office |
| Locating Engineers | " " |
| Division Engineers | " " |
| Office Engineers in Division Offices | " " |

Each person authorized to issue time statements shall be bonded in such amount as the State Highway Engineer may direct, but, in no case, in an amount less than $1,000.

b. *Limits of Authority*—Persons authorized to issue time statements shall issue time statements only to persons carried on the pay rolls which are made up in their respective offices.

Persons authorized to make payment on time statements shall limit their payments to time statements issued within their respective districts or divisions by certain persons as indicated above under the heading "Persons Authorized to Issue Time Statements."

Time statements issued in the field will not be accepted for payment in the Accounting Division at Salem.

c. *Time Statement Forms*—Forms on which to prepare time statements will be supplied to authorized persons on letter requisition addressed to the attention of the Accounting Division at the Salem office. The forms, number A-198, are numbered serially, and each individual will be held personally responsible for the safekeeping of all forms supplied him and shall account for each numbered form.

When forms are spoiled in preparation, or otherwise made unfit for use, the word "spoiled" shall be written plainly on the face of each copy, and the original copy shall be returned to the Accounting Division for credit. The duplicate copy will be sent to the office from which the pay check would normally have been issued, and there filed with the duplicate copies of paid time statements.

Forms used in issuing time statements will be credited to the person to whom they were originally supplied when the time statements reach the Accounting Division at Salem.

Time statement forms supplied to Division Engineers may be issued by either the Division Engineer or the Office Engineer in the Division Office. Time statement forms will not be supplied to office engineers in division offices.

d. *Preparation of Time Statements*—Time statements shall be prepared in triplicate. All required information, except signatures, shall be written or lettered with indelible copying pencil, and all signatures shall be written in ink on all three copies.

Care shall be exercised to avoid errors and omissions which will result in overpayment. A very common mistake is the omission of the deduction for group insurance and hospital and medical service insurance. *Overpayments made on a time statement will be charged to the person issuing the statement.*

Cost distribution need not be shown on time statements.

Time statements shall bear the signature of the payee. If the payee should not be at hand to sign, the statement shall be mailed to him for his signature.

In addition to the signature of the payee, the time statement shall bear other signatures as follows:

| *Person Issuing Statement* | *Required Signatures* |
|---|---|
| Resident Engineer | Resident Engineer<br>Division Office Engineer<br>Division Engineer |
| Locating Engineer | Locating Engineer<br>Division Office Engineer<br>Division Engineer |
| Division Engineer | Division Office Engineer<br>Division Engineer |
| Division Office Engineer | Division Office Engineer<br>Division Engineer |

No erasure should be made on any time statement. If an error is made, each of the three copies of the statement shall be plainly marked "spoiled", and the original copy sent immediately to the Accounting Division at Salem for credit. Do not, under any condition, destroy or lose a time statement form.

Each of the three copies of a time statement shall bear the impressed seal of the person by whom the statement is issued, and the original and duplicate copies of the time statement shall bear the impressed seal of the person by whom the pay check is signed.

In case the payee plans to call for his pay check at the office at which the check is to be issued, the payee shall, unless he is personally known to the paying officer, be provided with a signature certification slip prepared on form No. 507. This slip shall be taken up by the person

who makes delivery of the check and shall later be filed with the duplicate copy of the time statement.

e. *Original Copy of Time Statement to Serve as Authority for Issuance of Pay Check*—The original copy of the time statement shall serve as an order for the issuance of a time check. That copy shall be delivered to the person authorized to make payment by one of the following means:

1. By personal delivery by the person issuing the time statement.
2. By messenger, when the messenger is personally known to the paying officer and when the paying officer has personal knowledge of the employee in whose favor the time statement is drawn and of the service for which he is to be paid.
3. By registered mail (return receipt to be requested).

The paying officer shall not honor a time statement delivered to him by the payee or by a person claiming to be the payee. Neither shall the paying officer honor a time statement delivered to him by a messenger unless the conditions stated in numbered paragraph 2 above are fully complied with.

As soon as the time check is written, the word "paid" shall be stamped on the face of the time statement with the rubber stamp furnished for that purpose.

If the time check is issued from the Division Office, the original copy of the time statement (stamped "paid") shall, following issuance of the check, be forwarded to the Accounting Division at Salem.

The original copy of the paid time statement shall be forwarded to Salem from the Division Office on the day on which it is issued or received, or as soon thereafter as it is possible to obtain the signature of the Division Engineer.

f. *Disposition of Duplicate and Triplicate Copies of Time Statements*—The duplicate copy of the time statement shall be forwarded (with the original copy) to the office by which the time check is to be issued and shall there be stamped "paid" and filed as evidence of the authority under which the time check was issued.

The triplicate copy of the time statement shall be left in the time statement book and held by the issuing office until all forms in the book have been used, at which time the entire book shall be sent to the Accounting Division at Salem for permanent filing.

When crews are disbanded, all time statement books on hand shall be turned in to the Accounting Division at Salem. Books used infrequently will be called into the Accounting Division for audit and return at intervals not exceeding one year.

### Article 9—Time Checks

a. *Persons Authorized to Issue Time Checks*—The following persons, and no others, are authorized under the conditions stated hereinafter to draw checks on the State Treasurer for emergency payments to employees of the Department:

1. State Highway Engineer.
2. Pay Roll Supervisor in Salem Office.
3. Claims Supervisor in Salem Office.
4. Division Engineers.
5. Office Engineers in Division Offices.
6. District Maintenance Superintendents.
7. Shop Superintendents in Branch Shops.

The authority of Division Engineers, Office Engineers in Division Offices, District Maintenance Superintendents and Shop Superintendents is limited to the drawing of checks to make payments on time statements issued by themselves or by authorized persons employed under their supervision. The persons named are not authorized to issue checks to make regular pay roll payments or to make payment for purchases of any kind.

All checks issued to make payment on time statements shall be called "time checks".

b. *Pay Check Forms*—Forms on which to draw time checks will be supplied to authorized persons on letter requisition addressed to the attention of the Accounting Division at Salem. The forms will be numbered serially, and each individual will be held personally responsible for the safe-keeping of all forms supplied him and shall account for each numbered form. When a form is spoiled in preparation or otherwise made unfit for use, the word "spoiled" shall be written plainly on its face, and the form shall be returned to the Accounting Division at Salem (through the Division Office) for credit. Forms used in the preparation of checks will be credited as the checks are received by the Accounting Division at Salem after having been cashed.

c. *Only Original Copies to be Accepted for Payment*—Only the original copy (white copy) of a time statement shall be accepted as authority for payment.

When payment is made on a time statement, the word "Paid" shall be stamped on the face

of the time statement with the stamp furnished for that purpose.

d. *Preparation of Time Checks*—Time checks shall be written in ink and shall be signed in ink by the person to whom the check form has been issued and charged. No other person shall sign for him.

No erasures or changes shall be made in the writing on a check. If an error is made, the word "void" should be written or stamped on the face of the check form and the form sent (through the Division Office) to the Accounting Division at Salem for credit.

e. *Delivery of Check to Payee*—Time checks signed by a Division Engineer, or the Office Engineer in the Division Office, shall be delivered to the payee personally by the Division Engineer or the Office Engineer, or, when delivery in that manner is impractical, shall be sent to the payee by registered mail.

Time checks signed by the Pay Roll Supervisor or the Claims Supervisor shall be delivered to the payee personally by the Pay Roll Supervisor or the Claims Supervisor, or shall be sent to the payee by registered mail.

Personal delivery to the payee as above provided may be made either at the office or in the field.

The above specified means of delivering time checks to payees may be deviated from and the check delivered by messenger only when the person by whom the check is signed has personal knowledge of the payee and of the service rendered by him and is personally acquainted with the messenger making the delivery.

When a check is called for by the payee, the person delivering the check shall take up the signature certification slip given the payee by the person by whom the time statement was issued, as hereinbefore provided. The payee shall be required to sign the certification slip in the presence of the paying officer, and the paying officer shall compare the signature so made with the signature made in the presence of the person by whom the time statement was issued. If the signatures are dissimilar in any respect, delivery of the check shall be refused until the identity of the person claiming payment can be positively established. The signature certification slip should be filed with the duplicate copy of the time statement.

In case the State suffers a loss by reason of the delivery of a check by means other than those above authorized, the person by whom the check is issued will be held personally liable.

**Article 10—Receipts for Time Checks**

a. *Signatures Required*—Whenever a time check is delivered, a receipt, Form A-80, shall be obtained from the payee. The receipt shall be prepared in triplicate on the standard pay check receipt form and shall bear the signatures of both the payee and the person making delivery of the check, and shall be countersigned by a third person who shall be a responsible employee in the office from which the check was issued. The third person will not be required to be a witness to the delivery of the check.

The receipt shall bear the impressed seal of the office or the person by whom the check was issued.

b. *Disposition of Receipt*—The triplicate copy of the receipt shall be held by the person making delivery of the check. The duplicate copy shall be filed with the duplicate copy of the time statement in the office by which the check was issued. The original copy shall be sent (through the Division Office) to the Accounting Division at Salem.

c. *Procedure When Checks are Sent by Mail*—When a check is delivered by registered mail, a registered mail return receipt will be accepted in lieu of the signature of the payee on the standard receipt form. In this case, the receipt form shall be filled out, signed by the person responsible for the mailing of the check and countersigned the same as required for personal delivery. The original copy of the receipt shall then be attached to the registered mail return receipt and sent (through the Division Office) to the Accounting Division at Salem.

**Article 11—Monthly Statement of Checks Issued**

a. *Preparing and Signing of Report*—Each person authorized to issue time checks shall keep a record of all checks issued. The record shall be prepared on form No. A-57, in duplicate.

Each sheet of this record shall be signed by the pay roll clerk or the office engineer in the division office, the Division Engineer, and the Pay Roll Supervisor.

b. *Copy to be Sent to Salem*—On the first of each calendar month, the original copy of the report for the previous month shall be sent to the Accounting Division at Salem, where it will be used in checking against the checks turned in for payment.

The report shall be sent in even though no checks have been issued during the month. In such cases, the report should bear the statement "No checks issued during month of ————————."

### Article 12—Division Office to Keep Time Statement Register

a. *Information to be Shown*—Each Division Office shall maintain a time statement register in which shall be listed the numbers of all time statements furnished by the Salem Office to persons employed within the Division, and in which shall be entered the date, the payee, and the amount of each time statement as it is issued. In this register, there shall be entered, also, the number of the check by which each time statement is paid and the date on which delivery of the check is made.

The time statement register shall be kept on standard form No. A-57.

b. *Purpose*—The purpose of having a time statement register kept in each Division Office, is (1) to enable that office to make sure that all time statements issued in the Division are coming through the office as intended, (2) to afford a check, through the time statement numbering system, on the validity of time statements coming to the office for payment, and (3) to facilitate the checking of time check information required on the pay rolls which pass through the office.

c. *Statements to be Checked Promptly as Received*—Each time statement issued at or passing through the Division Office shall be promptly checked against the time statement register to make sure that the number on the time statement is consistent with numbers assigned to and being used by the person with which the statement originated. In case of inconsistency, an immediate check-up shall be undertaken. The numbers of the checks issued in payment of time statements and the dates on which deliveries of the time checks are made shall also be entered in the record, and any cases in which the receipts do not come through promptly, shall be investigated.

### Article 13—General Instruction Regarding Time Checks

a. *Conditions Under Which Emergency Payment of Salary or Wages May Be Made*—Payment of salaries and wages by means of time statements and time checks shall be made only under the following conditions:

a. When an employee is leaving the service of the Department or is laid off and refuses to await payment on the regular pay roll.
b. When an employee is being transferred from one point to another and has not sufficient funds to finance his move.
c. When in the judgment of the superintendent or engineer in charge, an emergency situation is involved which makes immediate payment mandatory.

The issuance of time checks to meet personal obligations knowingly assumed and anticipated, is prohibited.

b. *Time Paid by Time Check to be Recorded on Pay Roll*—Persons for whom time statements are issued shall be carried on the regular pay roll in exactly the same manner and with exactly the same detail as persons not so paid. Amounts paid and cost distribution shall be shown and shall be included in the pay roll totals. The fact that payment has been made by time check shall be indicated, however, by entering the numbers of the time statement and the time check in the columns provided on the pay roll for those numbers.

For pay rolls originating in offices which do not issue the time checks, the time check numbers shall be placed on the pay roll when the pay roll passes through the office by which the checks were issued. The time check numbers shall be placed on time statements in the same manner.

c. *Protection of Statements and Checks*—All checks, time statements, receipts and signature certification slips, and all forms used in the preparation of such documents shall be kept in locked compartments which will afford suitable protection for them. This requirement is not to be construed, however, as prohibiting the carrying of such documents into the field to facilitate prompt payment of persons entitled to such payment.

d. *Signatures*—There shall be no omission of required signatures from any of the forms used in the making of emergency payments. Paying officers shall refuse to make payment on or to otherwise accept any forms from which any required signature is omitted.

No person shall sign for another or permit the signing of one person for another.

e. *Issuance of Checks in Absence of Maintenance Superintendent*—In cases of special emergency, when the Maintenance Superintendent, by reason of sickness or absence from his district, is unable to attend to the issuance of time checks required in the district, the required checks may be issued by the Division Engineer or the Office Engineer in the Division Office and delivered to the payees in the same manner as other checks issued from the Division Office.

The Maintenance Superintendent shall be notified promptly of all such actions and shall be furnished with the duplicate copies of the time statements and with the numbers of the checks issued.

f. *Responsibility for Erroneous Payment*—Persons issuing time statements and checks will be held personally liable for any overpayments or erroneous payments that may result from negligence, carelessness, error or oversight on their part or from their ignorance of or non-compliance with any of the instructions given herein.

**Article 14—Delivery of Regular Pay Checks**

All pay checks (except time checks) shall be issued from the Accounting Division at Salem. The normal means of delivery of these pay checks shall be as follows:

Sub-department or unit for which checks are issued—
Division Offices
Construction Engineer Crews
Survey Parties

Person to whom Accounting Division will deliver—
Division Engineer
Resident Engineer
Locating Engineer

Person by whom delivery to payees will be made—
Division Engineer, or
Division Office Engineer
Resident Engineer
Locating Engineer.

Delivery other than as above indicated may be made only when made in accordance with the provisions which follow.

At intervals, deliveries to field parties and field crews will be made by traveling auditors, or by such other employees of the Department as the Chief Accountant may designate.

When the person charged with the responsibility of delivering a check to an individual payee finds it impracticable to personally make the delivery to the payee, he shall arrange for the delivery of the check by another person or by mail, as the circumstances of the case may warrant.

When arrangement is made to have delivery made by another person, this other person shall be required to receipt for the check in his own name and to obtain a receipt from the payee in the manner explained hereinafter under the heading "Acknowledgments of Receipts of Pay Checks".

Should any loss result from the delivery of a check to a person other than the designated payee, such loss shall be made good by the person originally charged with the responsibility of making delivery of the check.

When an employee is transferred from one part of the department organization to another, as, for instance, from one resident engineer to another, the Accounting Division will, upon written instruction from the person under whose supervision the employee has worked, arrange for the delivery of the check by the person into whose jurisdiction the employee has been transferred. In lieu of the above, the person under whose supervision the employee has worked may mail the check to the person into whose jurisdiction the employee has been transferred, requesting that the check be delivered and a receipt obtained and returned.

When an employee who has been laid off desires to call at the Salem Office for a check which is to be issued in his favor, in accordance with a regular pay roll submitted or to be submitted, the person under whose supervision the employee has worked shall: (1) advise the Accounting Division by letter that the employee will call for his check, and (2) provide the employee with a letter of identification which he shall be required to present to the Accounting Division in order to obtain his check.

*Acknowledgments of Receipts of Pay Checks*—Persons responsible for the delivery of pay checks shall be responsible also for the obtaining of acknowledgments of receipt from the persons to whom deliveries are made.

The acknowledgments of receipt shall be executed in duplicate on standard form No. A-94, which form makes provision for approximately twenty acknowledgments on a single sheet. The sheets shall be prepared at the office of the person to whom the checks are sent for delivery, care being exercised to insure that only checks bearing the same pay roll number are listed together on a single sheet. If the group of

checks to be listed do not all bear the same pay roll number, a separate sheet is to be used for each pay roll number involved.

The checks should be listed on the sheets with the check numbers arranged in numerical order. Ordinarily, the listing on a single sheet should be limited to the checks for a single crew. Checks for two or more small crews may be listed on a single sheet, however, provided the checks all bear the same pay roll number.

Each sheet of acknowledgments, after having been signed by the recipients of the checks, shall be signed by the person by whom the checks are delivered. The original copy of each sheet shall then be mailed to the Accounting Division at Salem. The duplicate copy shall be retained by the person by whom the checks are delivered.

When it is found necessary to arrange for the delivery of a check by a person other than the one originally charged with the responsibility of its delivery, the acknowledgment of receipt shall be signed by the person by whom the delivery is to be made, and an explanatory comment shall be entered in the "remarks" column of the sheet. When the person thus entrusted with the delivery of the check makes delivery to the payee, he shall have an acknowledgment of receipt (prepared on a separate sheet of form No. A-94), signed by the payee, and shall send the original copy of the same to the person originally charged with the delivery of the check, who, in turn, shall forward said original copy to the Accounting Division at Salem with (or for attachment to) the sheet of acknowledgments on which the check was first listed.

When it is necessary to deliver a check by mail, the check shall be listed on the sheet of acknowledgments for the crew to which it applies and the person mailing the check shall sign as received of the check and shall write in the remarks column, "Mailed to payee at ——— ———."

Form A-51—5M—Revised—1-44

Resident Engineer – John M. Smith

Department or job Bear Creek – Deer Creek

OREGON STATE HIGHWAY COMMISSION

# PAY ROLL

Month of June, 1945

To be left blank.
Pay roll No. ....
Sheet No. ....

To be filled in.
Sheet No. 1
Total No. of Sheets 1

| No. | Name / Occupation | Job Prefix | Function No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | John M. Smith | 12-3456 | 900 | | | X | X | X | X | | | X | X | X | X | X | X | | | | | | | | X | X | X | | | | | | | |
| 1. | Res. Engr., Grade 3 | 12-3457 | 900 | X | X | | | | | | | | | | | | | X | X | X | X | X | X | X | | | | X | X | X | X | X | X | |
| | | 8111 | 568 | | | | | | | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| | George W. Brown | 12-3456 | 900 | — Full Month — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. | Computor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | James L. Doe | 12-5678 | 900 | | | | 4 | | 8 | 8 | 8 | 8 | 8 | 8 | | 8 | 6 | 2 | | | | | | | | | | | | | | | | |
| 3. | Laborer | 12-5678 | 900 | Overtime | | | | | 2 | 1½ | | | 2 | | | | | | | | | | | | | | | | | | | | | |
| | John A. Johnson | 12-3457 | 900 | — Time Check — X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 4. | Chainman | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | William O. Jones | 12-3456 | 900 | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | X | X | X | X | X | X | X | X | X | X | |
| 5. | Transitman, Grade 2 | 12-3457 | 900 | X | X | | | | | | | | | | | | | | | X | X | X | X | | | | | | | | | | | |
| | | | | Training Camp Leave – Deduct $1.40 per day for 15 days. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| No. | Name | Total Days-Hours | Rate | Amounts | Gross Amount Earned | Ind. Ins. | N. H. A. Dues | O. P. S. Dues | Group Ins | War Bonds | | Federal Tax | Other Deductions Item | Other Deductions Amount | Total | Net Amount Due | Time Statement No | Check No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | John M. Smith | 13 | 260.00 | 112.66 | | | | | | | | | | | | | | |
| 1. | | 15 | " | 130.00 | | | | | | | | | | | | | | |
| | | 2 | " | 17.34 | 260.00 | 28 | 2.50 | | | 37.50 | | II 35.90 | | | 76.18 | 183.82 | | |
| | George W. Brown | 30 | 160.00 | 160.00 | | | | | | | | | | | | | | |
| 2. | | | | | 160.00 | 30 | | | 65 | 18.75 | | IV 3.10 | | | 22.80 | 137.20 | | |
| | James L. Doe | 68 | 0.60 | 40.80 | | | | | | | | | | | | | | |
| 3. | | 5½ | 1.20 | 6.60 | 47.40 | 10 | | | | | | III .60 | | | .70 | 46.70 | | |
| | John A. Johnson | 10 | 130.00 | 43.33 | | | | | | | | | | | | | 23 | 4567 |
| 4. | | | | | 43.33 | 10 | | | | | 10 | 0 8.50 | | | 8.60 | 34.73 | | |
| | William O. Jones | 24 | 195.00 | 156.00 | | | | | | | | | | | | | | |
| 5. | | 6 | " | 39.00 | 195.00 | 30 | | 2.50 | | 18.75 | | I 30.60 | Training Camp | 21.00 | 73.15 | 121.85 | | |
| | Totals of this sheet | | | 705.73 | 705.73 | 1.08 | 2.50 | 2.50 | 65 | 75.00 | | 78.70 | | 21.00 | 181.43 | 524.30 | | |

Prepared by: G. W. Brown

Certified as correct and as a proper charge against the state of Oregon: John M. Smith Person in Charge

INSTRUCTIONS—Submit two copies to the Accounting Division.

Posted to Service Record

Audited and approved for pay't

## PAY ROLL SUMMARY BY ACCOUNT NUMBERS

This summary required on last sheet of all pay rolls except those covering extra work on unit price contracts.

| Job Prefix | Function No. | | Gross Amounts Earned | Percentage Chgs. Vac. | Percentage Chgs. S. L. | Total Charge to Job |
|---|---|---|---|---|---|---|
| 12-3456 | 900 | | 428.66 | 32.15 | | 460.81 |
| 12-3457 | 900 | | 212.33 | 15.92 | | 228.25 |
| 12-5678 | 900 | | 47.40 | 3.56 | | 50.96 |
| 8111 | 568 | | 17.34 | | | 17.34 |
| Gross total | | | 705.73 | 51.63 | | 757.36 |

| Deductions: | |
|---|---|
| Industrial acc. insurance | 1.08 |
| Hospital dues—N. H. A. | 2.50 |
| Hospital dues—O. P. S. | 2.50 |
| Group insurance | .65 |
| War bonds | 75.00 |
| Federal tax | 78.70 |
| Training Camp | 21.00 |
| Cr. vacations account } 8011-598 | 51.63 |
| Cr. sick leave account } | |
| Net total | 524.30 |

## PAY ROLL SUMMARY BY SHEETS

This summary required on last sheet of every pay roll.

| Sheet No. | Gross Amounts Earned | Ind. Acc. Insurance | N. H. A. Dues | O. P. S. Dues | Group Ins. | War Bonds | | Federal Tax | Other | Total | Net Amounts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 705.73 | 1.08 | 2.50 | 2.50 | 65 | 75.00 | | 78.70 | 21.00 | 181.43 | 524.30 |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| Totals | 705.73 | 1.08 | 2.50 | 2.50 | 65 | 75.00 | | 78.70 | 21.00 | 181.43 | 524.30 |

## FORCE ORDER SUMMARY

This summary required only when pay roll covers extra work on unit price contracts. Industrial insurance is based on gross amounts earned.

| Force Order No. | Gross Amounts Earned | Industrial Insurance Payable to Contractor % | Amounts | Contractor's Percentage | Total Amounts Payable to Contractor |
|---|---|---|---|---|---|
| | | | | | |
| Total | | | | | |

FOLD

OREGON STATE HIGHWAY COMMISSION
Salem, Oregon

## PAY ROLL

Month of June, 1945

Location Bear Creek – Deer Creek
(Give only the principal job if there are more than one)

Job Prefix 12-3456 No. of Sheets 1

Approved:

........ Staff Engineer—Division Engineer

This square to be filled in when the employes listed are State employes and are to be paid by individual checks.

Checks to be delivered or sent to:
John M. Smith — Name
Box 13A, Eugene, Ore. — Address

This square to be filled in when the pay roll covers "Extra Work" or work on a cost plus basis.

Contractor ........

Contract No. ........ Force Order No. ........

I certify that every item on this pay roll is a correct and a just charge against the State under the terms of contract.

........ Contractor's Representative

### CERTIFICATE AS TO ABSENT TIME

(1) I hereby certify that **NO** absent time is included as pay time on this pay roll.

Signature: ........

Title: ........

(2) I hereby certify that no absent time is included as pay time on this pay roll other than that shown on the statement of absent time, covering the same period as this pay roll, which I am submitting herewith or will submit at the end of said period; and that the absent time included as pay time on this pay roll is not in excess of accumulated absent time credits of the respective employes.

Signature: John M. Smith

Title: Resident Engineer

Form A-55—5M—7-44
STATE PRINTING DEPT

Pay Roll No. ..................

OREGON STATE HIGHWAY COMMISSION

Sheet No ..

## STATEMENT OF ABSENT TIME

Covering pay roll of Engineering Crew —— Construction Department
(Kind of crew or name of sub-department)

Under supervision of John M. Smith . Period June , 1945

| NAME (List only employees having absences to be reported) | PERIOD OF ABSENCE (Inclusive dates) From | To | ✓ | Total Time Absent Days | Hrs | TIME ABSENT WITH PAY Non-work Days | Sick Leave (Days) | Vacation Leave (Days) | Exchange Time Leave (Hrs) | Training Camp (Days) | Jury or Witness Duty (Days) | Days Absent Without Pay |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| If absent time is included as pay time on the pay roll be sure to sign absent time certificate (2), on pay roll | | | | | | | | | | | | |
| John M. Smith | June 7 | June 8 | | 2 | | | 2 | | | | | |
| William O. Jones | June 1 | June 15 | | 15 | | | | | | 15 | | |
| George W. Brown | June 25 | June 25 | | | 8 | | | | 8 | | | |

**NOTE: Do not use this form if there were no absences; sign absent time certificate (1) on pay roll.**

I hereby certify that to the best of my knowledge and belief the above statement is a true and complete statement of all absent time (other than regularly allowed absent time on Saturday afternoons, Sundays and holidays) included as pay time on the pay roll which this statement is represented to cover.

Noted: (signed) B. B. Black (Immediate Superior) Signed: (signed) John M. Smith

Title: Division Engineer Title: Resident Engineer

**This space for use of Pay Roll Office**

Compared with pay roll:

Entered on record of absent time:

INSTRUCTIONS: This statement is required in connection with all pay rolls that include absent time or leave time as pay time. Send one copy to the Accounting Division. Periods of absence shall be understood to be from the beginning of the first day to the close of the last day of the "period of absence" unless otherwise indicated. Non-work days include Sundays and holidays and other time, if any, such as Saturday afternoon, which is not regular work time under the pay roll concerned. Non-work days are to be listed in this statement only when they occur in conjunction with absences of other kinds. Exchange time leave is to be reported in hours only; all other absences are to be reported in days only. When leaves are shown for jury or witness duty, for training camp attendance or for "extra vacation" time, this statement must be accompanied by letters of explanation, as explained in circular letters applicable thereto.

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Form A-94—5M—8-42

**OREGON STATE HIGHWAY COMMISSION**

Pay roll month June, 1945
Voucher No. 4B321

## ACKNOWLEDGMENT OF RECEIPT OF PAY CHECK

**Each of the undersigned hereby acknowledges receipt of the pay check of the serial number opposite which his signature appears:**

| Name of Payee | Serial No of Check | Date Delivered | Signature of Person Receiving Check | Remarks |
|---|---|---|---|---|
| John M. Smith | 1231 | 7/5/45 | John M. Smith | |
| George W. Brown | 1232 | 7/5/45 | George W. Brown | |
| James L. Doe | 1233 | 7/5/45 | James L. Doe | Mailed to payee at Cottage Grove |
| William O. Jones | 1234 | 7/5/45 | William O. Jones | |

I hereby certify that the above listed pay checks were delivered by me as above indicated.

July 5, 1945 (Date) — John M. Smith (Name) — Resident Engineer (Title)

Checks are expected to be delivered to the payees personally. When delivery is made to any other person, or by mail, that fact shall be indicated and the occasion for it fully explained.

STATE PRINTING DEPT.

This Space for Use of Accounting Division
Voucher No ..........
Compared with check register by ..........

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Form A-220—5M—10-43
STATE PRINTING DEPT

OREGON STATE HIGHWAY COMMISSION

## REPORT OF EXCHANGE TIME WORKED

Supporting Pay Roll of: Engineering Crew —— Construction Department (Kind of crew or name of sub-department) Pay Roll No.

Under Supervision of: John M. Smith, Resident Engineer Period June, 1945

| Name / CLASSIFICATION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | Total Hours Worked | Reason for Exchange Time Worked |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| George W. Brown / Computor | | | | | | | | | | | | | | | | | | | | | | 8 | | | | | | | | | | 8 | Contractor installed large culvert on 22nd (election day), necessary to have inspector present. |

I hereby certify that, to the best of my knowledge and belief all of the time reported hereon is time worked outside of regular working hours and is time eligible for exchange time leave in accordance with the Department's rules and regulations relating to exchange time.

Signed: (signed) J. M. Smith Noted: (s) B. B. Black (Immediate superior)

Title: Resident Engineer Title: Division Engineer

**This Space for Use of Pay Roll Office**

Compared with pay roll: ..........

Entered or record of absent time: ..........

INSTRUCTIONS: This report is to be prepared only when exchange time worked amounts to one hour or more in any one day, and then only in the event that exchange time leave is not taken on the same day.
Submit original with pay roll to the Accounting Division. Prepare and submit copies in accordance with instructions contained in circular letters relating thereto.

Form A-80—6M Sets—8-41 Triplicate

OREGON STATE HIGHWAY COMMISSION

## Acknowledgment of Receipt of Time Check

Check in favor of John Doe Check No. 321

In the amount of $46.38 Time Statement No. 10436 (If any)

I hereby certify that I did personally receive the check above described on June 18, 1945

I hereby certify that I did personally (Personally or by registered mail) deliver the check, above referred to, to the person for whom it was intended, on June 18, 1945

(s) John Doe (Signature of person receiving check)

(s) Edward A. Bush (Signature of person delivering check)

Title Office Engineer

Countersigned B. B. Black (Maint. Supt. or Div. Engr.)

SEAL OF ISSUING OFFICE SEAL

If delivered by mail, attach return registered mail receipt to original copy hereof and forward to Salem Office. Show number of registered mail receipt and name of issuing post office here:

No. P. O.

STATE PRINTING DEPT.

Form No. A-219—5M—12-43

OREGON STATE HIGHWAY COMMISSION

## Physician's Certificate

June 12, 1945

I, M. A. Doctor, M. D., a physician in active practice at Pendelton, Oregon, do hereby certify that John Doe has been sick or injured, and that said sickness or injury has necessitated his or her absence from his or her employment during the period from June 2, 1945 to June 11, 1945, inclusive.

(signed) M.A. Doctor, M. D.
Attending Physician

Sick leave allowance in excess of three days may be granted only when the pay roll is accompanied by a copy of this form duly executed by a practicing physician. When the leave overlaps two or more pay roll periods, each of the pay rolls involved must be accompanied by a certificate.

STATE PRINTING DEPT.

Form No. 507—6M—1-38

OREGON STATE HIGHWAY COMMISSION

## Signature Certification

To Mr. B. B. Black
Division Engineer
Bend, Oregon

Redmond, Oregon
June 17, 1945

The signature appearing in the lower left-hand corner here of was made in my presence by John Doe, who is entitled to payment for services rendered in the capacity of Chainman during the month ending June 30, 1945, as indicated by { Time statement Number 10436 / Regular pay roll closed June 30, 1945

(s) John Doe
(Signature of above-mentioned person, made in presence of employe issuing this certificate)

(s) John M. Smith

Resident Engineer (Title)

(Signature of above-mentioned person, made in presence of employe delivering check)

SEAL OF ISSUING OFFICE SEAL

This certificate is issued to assist in the identification of persons entitled to receive payment for service rendered the State Highway Commission, who may call in person for such payment at the proper paying office.

STATE PRINTING DEPT.

Form A-198 6M Sets—8-41 Original

OREGON STATE HIGHWAY COMMISSION

## Time Statement (Non-Negotiable)

Date June 14, 1945

№ 10436

Service rendered by John Doe During month of June 1945

| Date | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | | | | | | | | | |

Employed as Chainman from June 1 to June 14, 14 (hours/days) at $ 4.33 Earned, $ 60.62

Employed as ... from ... to ... (hours/days) at $ ... Earned, $ ...

DEDUCTIONS

| Ind. Acc. Insurance | Hospital Assn. Dues | Federal Tax |
|---|---|---|
| 0.14 | 2.50 | 11.60 |

Total Amount Earned, $ 60.62

Total Deductions, $ 14.24

Amount due Fourty Six dollars and Thirty Eight cents, $ 46.38

Signed by: John Doe (Payee)

Signed by: Wm. Brown (Timekeeper or Office Man)

Signed by: John M. Smith (Crew Supt., Foreman or Engineer)

Signed by: B. B. Black (Maint. Supt. or Div. Engr.)

Name of Crew Foreman or Engineer: John M. Smith

Kind of Crew: Engineering

Paid by Check No.

Name of Person Signing Check

Reserve Space—Salem Office

Voucher No.

Checked as to form

Regular pay roll

Record of checks

Duplicate time statement book

## SECTION 3. SICKNESS AND BENEFITS

*Article*

1. Hospital Association Agreements.
2. Hospital Association Membership and Application.
3. Doctors Available Under Hospital Agreements.
4. Deductions for Hospital Associations.
5. Hospital Association Benefits not for Injury During Work.
6. Industrial Accident Deductions.
7. Industrial Accident Compensation.
8. Group Insurance.
9. Inoculations Against Rocky Mountain Spotted Fever.

### Article 1—Hospital Association Agreements

The Oregon State Highway Commission has entered into agreements with the following hospital associations:

Oregon Physicians Service
337 Pittock Block (Phone ATwater 6393)
Portland, Oregon
190 S. Liberty Street (Phone 9187)
Salem, Oregon
225 Medford Center Building
Medford, Oregon

National Hospital Association
Mohawk Building (Phone ATwater 5291)
Portland, Oregon

### Article 2—Hospital Association Membership and Application

Any employee may apply for membership in either of these associations, but membership is not compulsory. Application forms are provided by the Hospital Association. Department heads or resident engineers are not to solicit memberships.

### Article 3—Doctors Available Under Agreements

Information can be obtained locally as to the doctors available under the various hospital agreements. A satisfactory list cannot be prepared as changes are being continually made.

### Article 4—See That Proper Deductions Are Made

It shall be the responsibility of the department head or resident engineer to see that the proper deductions are made each month from the pay roll, using the deduction column headed "N. H. A. Dues or O. P. S. Dues".

Premium deductions will be made at the time pay rolls are prepared and shall be $2.50 per calendar month or fraction thereof. Employees working less than the full calendar month and who have paid the sum of $2.50 are entitled to benefits of the agreement for the balance of the calendar month.

When an employee is transferred the engineer or department head shall inform the engineer or department head to whose supervision he is being transferred, as to whether or not the employee is a member of a hospital association, by indicating such information on the Notice of Transfer of Employees, form A-90 (see Sec. 4-4).

In case an employee is transferred during the month, it shall be the responsibility of the engineer or department head from whose supervision he is being transferred to make the premium deduction from his pay roll and to so notify the engineer or department head to whose supervision the employee is being transferred. In all cases where an employee carried on a field pay roll receives one or more time checks during the month, the premium deduction for the full month ($2.50) must be taken from the first time check issued.

### Article 5—Hospital Association Benefits Not for Injury During Work

The agreement with hospital associations does not apply to or cover injuries sustained by an employee arising out of and in the course of his employment with the State Highway Commission. In case of such injuries, the employee must look to the State Industrial Accident Commission.

### Article 6—Industrial Accident Deductions

Industrial accident deductions of $0.01 per day are to be deducted on the pay roll in addition to the deductions for hospital association membership fees.

### Article 7—Industrial Accident Compensation

It shall be a responsibility of all supervisory employees to see that all injuries to employees working under their supervision are promptly and properly reported in accordance with these instructions.

Each injury requiring the attention of a doctor shall be reported both to the State Accident Commission and the Highway Accounting Division on Accident Commission Report Form No. 20, a supply of which form should be requisitioned in the regular manner and kept on hand in all field offices.

In the case of even trivial injury, and particularly if there is to be a loss of work time, the employee should be encouraged to see a doctor and have a report made on Form 20 for two

reasons, (a) the case may develop complications and (b) compensation for lost time cannot be collected from the Accident Commission unless the case is attended by a doctor and a report made on Form 20.

If the injury is of a serious nature, it should be reported immediately to the Division Engineer and the Staff Engineer by *letter or telephone* as the seriousness of the injury may indicate; report on Form 20 to follow later.

In each case where claim for lost working time is to be made against the Accident Commission, the employee is to be dropped from the regular pay roll and carried on a special pay roll, as provided for in the regulations applicable to "sick leave," Section 2, Article 6.

Reporting of Injuries on Form 20 is to be handled as follows:

a. The report is to be prepared *in duplicate* with additional copies for the supervisory employee and others, if desired; the workman's portion being filled out and signed by the injured workman, and the employer's portion being filled out and signed by the supervisory employee.
b. The original and duplicate copies of the report, filled out and signed as above indicated, shall be presented to the doctor by the supervisory employee or his assistant with the request that the doctor complete the report and forward the original copy thereof to the State Industrial Accident Commission as the Accident Commission regulations require.
c. Arrangement should be made with the doctor whereby the duplicate copy of the report will be called for by the supervisory employee or his assistant within a reasonable length of time. The doctor should, in all reason, be allowed at least three days in which to fill out his portion of the report.
d. When the duplicate copy of the report is obtained from the doctor, it is to be forwarded immediately to the Highway Accounting Division.

In the interest of the injured person, as well as the interest of the Department, the supervisory employee is urged to see that the above specified procedure is carried out expeditiously.

### Article 8—Group Insurance

Group life insurance is available to monthly rate employees whose rates of pay do not exceed two hundred dollars ($200.00) per month.

The group insurance referred to herein is furnished by the California Western States Life Insurance Company of Sacramento, California.

The amount of insurance for which an employee may apply is fixed at $1,000.00. It can neither be greater nor less than $1,000.00.

New employees entering the service of the Department who apply for the insurance within 60 days after entering the service, will be accepted for insurance regardless of physical condition and without medical examination.

Employees who do not apply for the insurance within the time limits as stated above, may, if the insurance company so orders, be required to furnish, at their own expense, evidence of insurability satisfactory to the company.

Engineers will be notified by the Accounting Division as applications from employees working under their supervision are accepted. These notifications will serve as authority for showing the required deductions on pay rolls.

Deductions will be shown on the pay roll under the column headed "Group Ins." and will be in the full amount of the monthly premium for each month or fractional month that the employee is carried on the Highway Department pay roll.

Questions concerning the operation of group life insurance should be addressed to the Accounting Division at Salem.

### Article 9—Inoculations Against Rocky Mountain Spotted Fever

The Highway Department is desirous of having inoculations against Rocky Mountain Fever taken by all field employees whose work is located in any of the areas of the State which are or may be infested.

It is therefore suggested that all employees, whose work is likely to take them into such areas, secure the necessary shots.

Both the National Hospital Association and the Oregon Physicians' Service are under contract with this Department to bear the expense of such inoculation. Those of our employees who carry coverage in either of the above associations may, therefore, proceed in the usual manner, having the doctor to whom they report bill the appropriate hospital association for the entire expense of the three inoculations at the standard price of $1.00 per shot.

Those of our employees who do not carry coverage in either of the above hospital associations will obviously have to bear the expense of these inoculations in the first instance. However, the State Industrial Accident Commission

has agreed to contribute $ .50 per shot to the cost of these inoculations and if these employees (those who are not covered by either hospital association) will forward to the headquarters office in Salem, through the regular channels, a receipt from their doctor covering the cost of these inoculations, the Salem office will in turn forward it to the Accident Commission for reimbursement in the amount of $ .50 per shot, as above noted.

It sometimes, though very rarely, happens that one or more of these inoculations is followed by an unfavorable reaction. In the event of such unfavorable reaction, if medical treatment is required, the Industrial Accident Commission will assume the expense and it will be proper for the workman to file a claim.

It is urged that all employees in infested areas take advantage of these offers and secure the necessary inoculations.

(Back of form 20)

## INSTRUCTIONS TO WORKMEN

Workmen are required to report accidents to the employer, who will furnish this form and assist in compiling it. Workmen should then take form to attending physician for completion, mailing the form to Commission, when completed.

Describe in detail how the accident occurred. Failure to do so will necessitate additional information that will delay action on your claim.

To secure compensation, the workman's application for compensation must be completed in full and **filed with the Commission at Salem, Oregon, within three months from date of the accident.**

Names of witnesses to the accident are particularly important.

## INSTRUCTIONS TO EMPLOYERS

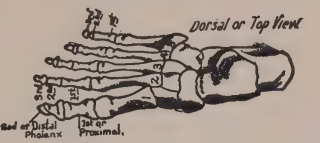
Employers are required to keep a supply of these forms on hand and assist workmen in compiling them upon request. If you believe a claim fraudulent or have any reason to question it explain in detail.

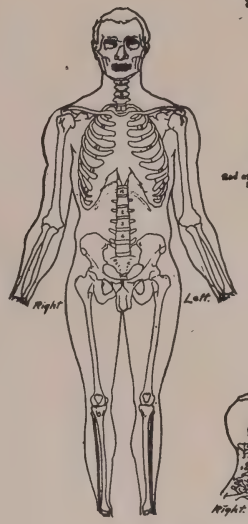
Employers should read carefully information given in workman's report. Names of witnesses to the accident are important and should not be overlooked.

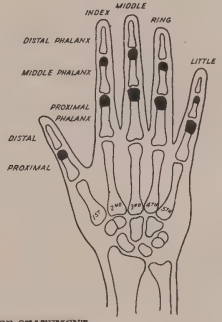
## INSTRUCTIONS TO ATTENDING PHYSICIANS

A workman reporting for treatment should have this form completed by himself and employer, showing an accidental injury subject to the compensation law in order to insure payment for medical attention. Workmen who are employed by employers operating under a medical or hospital contract are not entitled to treatment except by contract doctors.

If this report has been filled out by the employer, send it to the State Industrial Accident Commission, Salem, Oregon. If the employer has not filled out his part of the report return this to him for completion.



## PENALTY FOR MAKING FALSE STATEMENT

If any person shall willfully make any false statement or representation to the commission for the purpose of obtaining any benefit or payment under the provisions of this act, either for himself or any other person, the person making such false statement or representation shall be guilty of a felony, and, on conviction thereof, shall be punished by imprisonment in the state penitentiary for a term of not less than one year nor more than five years, or by a fine of not less than $500 nor more than $5,000, or both, in the discretion of the court. (Oregon Code 1930, § 65-1838(e).)

STATE PRINTING DEPT.

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**PREVENT DELAYS**
Answer every question fully

# INDUSTRIAL ACCIDENT COMMISSION

# ACCIDENT CLAIM

Claim No. .....
Firm No. .....
Indexed by .....
Form No. 20

## Part I Workman's Report

1. Name (Please Print) John (First name) Oscar (Middle) Doe (Last)
2. Address 865 Dee St. (Street) Coos Bay, Oregon (City) — Social Security No. none
3. Age 24n Sex Male If married, full name of wife or husband Jane Doe
4. Address, wife or husband same (Write "Same" if living together) If divorced, when and where .....
5. Name of employer Ore. State Highway Comm. Address Salem, Oregon Are you related .....
6. Were you doing regular work at time of accident? Yes How long in present employ? 3 years
7. Piece or time work? time Wage or earnings per day $ 160.00 per mo Which is day off? Sunday
8. Working shift from 8 ~~A.M.~~ P.M. to 5 ~~A.M.~~ P.M. Hours per day 8 Kind of work survey
9. Date of accident June 6, 19 45 Hour of day? 1:30 ~~A.M.~~ P.M. On employer's premises? yes
10. Place where accident occurred: Street No. Highway right of way City 5 mi. S. of Coos Bay County Coos
11. Will you lose time from work? yes If so, date you quit; June 6, 194 5 Hour 1:30 ~~A.M.~~ P.M.
12. Can you work now? No If so, date you returned to work ..... 194 Hour ..... A.M. P.M.
13. Describe how accident happened and GIVE CAUSE
Was cutting brush on survey when axe slipped and cut foot.
14. Names of witnesses to accident Thomas L. Brown
15. Part of body injured Foot Right ☐ Left ☒
16. Has this part been injured before? No Approximately when? .....
17. Have you ever received compensation from the Commission? No When? .....

GIVE NAMES AND BIRTH DATES OF YOUR CHILDREN UNDER 18 SUPPORTED BY YOU

| | NAME | RELATIONSHIP | DATE OF BIRTH Mo. Day Year | NAME | RELATIONSHIP | DATE OF BIRTH Mo. Day Year |
|---|---|---|---|---|---|---|
| 18. | John O. Doe, Jr. | son | 5 2, 1944 | | | |
| 19. | | | | | | |
| 20. | | | | | | |

I declare that the foregoing statements are true to the best of my knowledge and belief.
Signed 7th day of June, 19 45 at Coos Bay, Oregon,

IMPORTANT ☛ WORKMAN SIGN HERE (s) J.O. Doe

## Part II Employer's Report

21. Did you have personal knowledge of this injury? Yes To whom was the accident reported? J. M. Smith
22. Do you contribute to Accident Commission on claimant's wages? Yes Under what rate classification of pay roll? Survey
23. What is workman's daily wage or average daily earnings? 160.00 per mo. Is he regularly employed 6 or 7 days a week? 6
24. Will you pay claimant any wage while disabled? Yes How much hospital dues do you charge your men per month? .....
25. Accidents occurring on bridges must state kind and height ..... Does claimant reside with you? No
26. Accidents occurring on excavations must state depth ..... If related, state relationship .....
27. **State any reasons you may have why the validity of this claim should be questioned** none
28. Names of witnesses to accident: Thomas L. Brown
29. FIRM NAME Ore. State Highway Comm. Signed by (s) J.M. Smith, Resident Engineer (Title)
30. Business Highway Construction & Maint. Address Salem, Oregon
31. Signed at Coos Bay, Oregon, this 7th day of June, 194 5.

## Part III Physician's Report

32. Has patient been maimed or crippled by any previous injury? ..... If so, date .....
33. Nature of previous injury .....
34. Describe present injury, stating parts injured, objective or subjective symptoms, marking chart on back of this report to indicate site .....
35. Date of first treatment ..... Hour of treatment ..... A.M. P.M.
36. Treatment used .....
37. Any permanent disability ..... To what hospital sent? .....
38. Is injury serious enough to prevent working? ..... Opinion as to time from DATE of first treatment that patient will be disabled ..... Give name of any other physician who has or will treat this workman .....
39. Is there any question about the condition being due to accident? .....
40. Are you treating this case for a hospital association? ..... Or as the contract physician? .....
41. Employer's name ..... Signed ..... (If not an M. D. affix professional degree)
42. Claimant's name ..... Address ..... Date .....

## SECTION 4. PERSONNEL

*Article*

1. Merit Rating System.
2. Promotions, New Employees and Applications.
3. Changes in Personnel.
4. Transfer and Release of Employees.
5. Wage Rate Approvals.
6. Under Age Employees.
7. Bonded Employees.

### Article 1—Merit Rating System

Highway Department Bulletin No. 9 "The Merit System for Engineering Personnel", completely outlines the system under which the Department operates. This bulletin is available upon requisition.

Questionnaires will be sent by the Personnel Director to each of the references given by any applicant and the replies received shall govern to a large extent the consideration to be given and the merit rating values. Persons already employed who are to be transferred, promoted or discharged, are given a merit rating by three persons in the organization, beginning with the person immediately in charge and checked finally by the staff officer in charge of that particular department. This rating will be made on Form E-219 in the manner outlined on the face of said form. (See Section 4, Article 3.)

### Article 2—Promotions, New Employees and Applications

Promotions are based on the ability, education, self-improvement and experience of an employee, according to his merit rating.

It is the desire of the Highway Department that we build up our personnel with employees who are ambitious to become capable of eventually filling higher positions in the Department.

No person shall be given or promised promotion until after the request has been approved and returned to the Resident Engineer.

Vacancies in engineering personnel shall be filled from the Construction Engineer's office in all cases.

Applications for employment of whatever nature received by any official of the Department are to be immediately turned over to the Personnel Director, who will attend to the matter of investigating the applicant's qualifications for the position. Application for employment shall be made on Form E-5.

### Article 3—Changes in Personnel

Resident engineers and other employees making weekly reports will note all changes in personnel, stating the effective dates of starting or leaving, position held and other pertinent information.

Record of Employment card, Form No. E-219, is to be sent in immediately through the Division and Construction Engineer to the Personnel Director whenever a member of a crew leaves the employment of the Department or is transferred to another engineer. This card should be filled out when the employee reports for work and the card held until the employee is transferred or leaves the Department, at which time the entries regarding the "Merit Rating" are to be completed by the Resident Engineer, after which the card is to be sent to the Division Engineer for his consideration and transmittal to the Construction Engineer.

The Construction Engineer shall be notified, through regular channels, a week or more in advance of the time it is expected to dispense with the services of any person who may be available for transfer to other projects and who should, by reason of capability and seniority of service, be given consideration.

### Article 4—Transfer and Release of Employees

Division engineers may transfer employees within their respective divisions, provided that such transfer will not involve any change in the rate of pay of the employee.

When transferring men from one engineer to another (upon authority of the Division Engineer), Form A-90, "Notice of Transfer of Employees", will be used. All pertinent information must be entered, including the employees' withholding tax exemption code number. (See Section 2, Article 7.) Prepare Form A-90 in quadruplicate. Instructions for distribution of the four copies are printed on the face of the form. In general, time consumed in traveling from one job to another will be charged to the second job.

Employees shall not be laid off without authority of the Construction Engineer.

*Notice of Termination of Employment*—When an employee leaves the Department for any reason, the Engineer or other person in charge will prepare Form E-245 "Notice of Termination of Employment" in conformance with the instructions printed on the form.

Employees may be discharged by the person in charge. Basis of any discharge shall be a violation of the rules of the Department, inefficiency or insubordination. A letter of explanation shall be addressed to the Division Engineer, giving full particulars involved in the discharge. A copy of this letter will be sent to the Construction Engineer.

### Article 5—Wage Rate Appproval

All changes in classification or wage rate for employees must be approved by the State Highway Engineer. "Wage Rate Approval Form", No. A-60, will be used in making requests for approval. Submit three copies through the Division Engineer. After approval, one copy will be returned to the Resident Engineer and one copy to the Division Engineer. Instructions are printed on the face of this form; read them carefully.

Do not file an application for wage rate approval unless the employee is to actually perform the work indicated. Violation of this rule is classified as falsification of pay rolls and is punishable by dismissal.

No pay roll can be passed for payment until the wage rate for all employees listed thereon has been approved on Form A-60.

*War-time Classification of Employees*—Employees responsible for pay rolls have been advised to use caution against carrying any employee under a work classification which will not correspond strictly to the class of work he is performing.

This Department expects to continue to adhere to this general policy. However, during the present war emergency and the resultant curtailment of available manpower, it has become necessary temporarily to relax these regulations. For example, it may frequently be necessary that a transitman or draftsman work for several days or even longer in the capacity of chainman in order to keep construction work going and avoid a stoppage of the contractor's operations.

It may likewise be necessary that employees such as shovel operators be utilized for other work at different times, or for a paving inspector to do a certain amount of office work, or do some chaining during the period of this employment.

In all such cases, when the employee is called upon *temporarily* to perform work in a lower classification purely as a convenience to the Department and because of manpower shortages due to the war emergency, his classification need not be changed and this will not be considered as in any way constituting a falsification of the pay roll. Under no circumstances, however, will it be permissible *permanently* to carry a man on the pay roll at a higher classification than that warranted by the nature of his major employment in order to give him a higher wage, as such procedure would clearly be subterfuge.

### Article 6—Under-age Employees

Employees under eighteen (18) years of age *must* secure a Certificate of Age from the State Bureau of Labor, Wage and Hour Commission. An application form may be obtained by writing to the Personnel Director in Salem. This form should be completely filled in and returned to the Personnel Director.

Minors under 16 years of age will not be employed. No minor under 18 years of age will be permitted, under any circumstances, to operate any type of motorized equipment. Women should not be permitted to lift any weight which exceeds 25 pounds.

### Article 7—Bonded Employees

Resident Engineers, Transitmen, Inspectors, Checkers and other employees who are required to sign pay rolls, issue time checks or material receipts must be bonded. Bonds are in force only during the time that the classification is shown on the pay roll.

Requests for bonding should be addressed to the Construction Engineer, Salem.

Form A-60—10M—6-40

OREGON
STATE HIGHWAY COMMISSION

## WAGE RATE APPROVAL

Date May 1 ..... 1944

Name of employee Robert B. Male ..... Age .....

Place of permanent residence 1479 N. Exter St. Bend, Ore.

Classification in Highway Department immediately prior to this proposed change none ..... Prior wage rate none

Proposed classification Chainman ..... Standard wage rate 145 00

Proposed effective date for proposed rate May 1, 1944 ..... Proposed wage rate 145 00

Branch of service in which employee is to serve (indicate by check mark):

| | | | |
|---|---|---|---|
| Section maintenance crew | | Oiling crew | Paving crew |
| Maintenance superintendence | | Bridge crew | Extra gang |
| Admin. organization | | Equipment dept. | Planning survey |
| Field engineering | ✓ | Miscellaneous | |

Occasion for employment at new rate (indicate by check mark):

- To replace ..... (Give name of employee replaced)
- Temporary expansion of crew ✓ Organization of new crew
- Permanent expansion of crew, Shifting in present crew
- Increase in pay without change in class of employment

Name of foreman or other immediate superior J.M. Norton ..... Crew headquarters Bend

By whom was employee selected or designated for this employment L.A. Sampson, Div. Engr. (Give name of department employee responsible for this selection)

On whose recommendation, if any, was employee selected or designated " " (Give name of department employee recommending this selection)

Under whom employed immediately prior to this employment not employed (student) (If previously employed by Highway Commission, give name of last foreman or engineer; if not, give name of last employer)

Brief statement of qualifications, including mention of any former employment in Highway Department:

Two years civil engineering at O.S.C.

| | |
|---|---|
| Request made by J.M. Norton | Noted ..... Personnel Director |
| Approval recommended ..... Division Engineer | Approved ..... Maintenance Engineer |
| Approval recommended ..... Staff Engineer | Approved ..... State Highway Engineer |

**This Space for Use of Accounting Division**

Rates and classifications checked:

New rate and classification recorded:

**INSTRUCTIONS:**

Except as otherwise indicated in paragraphs below, wage rate approvals will be required as follows:

1. For all new employees.
2. For all persons reemployed at an increased wage rate, or reemployed after having been out of the service of the Department for one year or more.
3. For all changes in classification.
4. For all increases or decreases in wage rate or salary without change in classification.

**Exceptions:** (a) Changes in classification for hourly rate employees will not require wage rate approvals, if the employee concerned has held within the 12-month period immediately preceding, a classification for which the wage rate is as high or higher than the wage rate for the new classification. (b) Wage rate approvals will not be required for traffic recorders whose employment will extend over a few days only each month.

**ROUTING OF COPIES:**

District Maintenance Superintendents and Field Engineers will forward three copies through Division Engineer's Office, to Accounting Division. Other offices will forward three copies directly to Accounting Division. Accounting Division will retain two copies temporarily, and forward original as follows:

For maintenance and extra gang employees paid on an hourly rate basis—Original will be forwarded to Maintenance Engineer, who is to approve and forward, through office of Personnel Director, back to Accounting Division.

For all other employees—Original will be forwarded to Staff Engineer, who is to approve and forward, through office of Personnel Director, to the State Highway Engineer for approval and return to the Accounting Division.

After the original has been finally approved, the Accounting Division is to retain the original, return one copy to the office of origin, and one copy to the Division Engineer or Staff Engineer.

STATE PRINTING DEPT

Form E-5—25M—5-45

OREGON STATE HIGHWAY COMMISSION

## APPLICATION AND EMPLOYMENT RECORD

No. .....

Attach PHOTO here

"All honorably discharged soldiers, sailors and marines and the widows of such are entitled to preference in employment as provided by the Highway Commission governing granting of applications."

Date July 1 ..... 19 45

Name Roe (Last) Paul (First) O. (Initial)

Present address ..... (No.) Halsey (Street) ..... (City) 461 (Phone)

Permanent address ..... (No.) Halsey (Street) ..... (City) 461 (Phone)

Can be reached by calling Halsey 461 (Phone)

Position applied for Chainman ..... Stakeman (Will also consider)

Years experience in position applied for none

EDUCATION:

Years in grade school 8 ..... Years in high school 4 ..... Years in college 4 ..... Course C. E. ..... Degree Yes ..... Year 1939

College attended Oregon State ..... From 1935 ..... To 1939

College attended ..... From ..... To .....

Age 30 ..... Date of birth 6-28-1915 ..... Height 5' 9" ..... Weight 165 ..... Married No ..... Dependents None

Are you a citizen of the United States? Yes ..... How long have you resided in Oregon? 30 years. Place of previous residence—

Town ..... State ..... Have you worked for the Oregon State Highway Department before? No ..... If so, approximate starting date, and under whom?

..... State reason for leaving

Are you at present employed? No ..... If so, by whom?

Are you registered to practice professional civil engineering in Oregon? No

SUMMARY OF EXPERIENCE
(Other than with Oregon Highway Department)

| Employer | From | Until | Position | Salary |
|---|---|---|---|---|
| State Cannery Co., Inc. | Sept. 1939 | Oct. 1940 | Clerk | 100.00 |
| Great Northern Ry. Co. | Oct. 1940 | Nov. 1943 | Rodman | 150.00 |
| U. S. Army | Nov. 1943 | May 1945 | Pvt.a | 50.00 |

(If additional space is necessary use reverse side)

Physical condition (note any impairments) None

Have you any relatives now employed by this Department? No ..... If so, whom, relationship and where located?

The names and addresses of FIVE references should be listed (former employers preferred) who may be contacted by this Department regarding the qualification and fitness for the position applied for.

(Name) E. C. Thomas (Address) 611 N. 13th St., Corvallis (Town)
(Name) Geo. A. Gleason (Address) 6821 Arnold Ave., Corvallis
(Name) Dr. G. E. Load (Address) 1589 Know St., Seattle, Wn.
(Name) M. E. Smith (Address) 142 Blank Ave., Seattle, Wn.
(Name) P. J. Meeker (Address) 853 S. 11th St., Corvallis

Signed (signed Paul O. Roe) Applicant

Form E-340—40M—6-43

OREGON STATE HIGHWAY COMMISSION

## NOTICE OF TERMINATION OF EMPLOYMENT

1. Name of employee Arthur S. Black
2. Classification Draftsman, Gr. 1 ..... 3. Date service terminated Aug. 1, 1944
4. Reason for leaving department: Inducted by Army ("Change of Occupation", "Inducted by Army", "Enlisted in Navy", Etc.)
5. O.S.H.D. Identification Card: Attached ☒ None Issued ☐
6. Record of Employment Card (Form 518): Attached ☒ Not Required ☐
7. Occupational deferment was not requested for this employee. (Was, was not)
8. Is employee under 18? No ..... Certificate of age attached ☐
9. If employee is purchasing bonds under payroll allotment plan, does he request refund of any unexpended balance? Yes .....
10. Address to which Withholding Tax statement, bond refund, etc., is to be mailed:
    141 South St., Pendleton, Ore.
11. Is employee a member of State Guard Engineer Battalion? No ..... Company .....
    Does he request discharge? ..... Character rating: .....
    State Guard Identification Card attached ☐

Remarks: .....

B.B. Ingram (Signature)
Resident Engineer (Title)

SEND A CARBON COPY DIRECTLY TO AND MARKED FOR THE ACCOUNTING DIVISION. Other copies are to be prepared and routed as follows:

PAVING and OILING CREW FOREMEN are to keep one copy and send the original and two copies to the Dist. Maint. Sup't.

DISTRICT MAINTENANCE SUPERINTENDENTS and RESIDENT ENGINEERS are to keep one copy and send the original and one copy to the Division Engineer, who will forward the original to the respective Staff Engineer.

SHOP SUPERINTENDENTS are to keep one copy and send the original and one copy to the Master Mechanic, who will forward the original to the Maintenance Engineer.

ALL OTHER PERSONS responsible for the preparation of payrolls are to keep one copy and send the original to the respective Staff Engineer.

ALL CARDS and certificates of age are to be attached to the original copy of this report.

STATE PRINTING DEPT.

Form A-56—25M—2-41

OREGON STATE HIGHWAY COMMISSION

## NOTICE OF TRANSFER OF EMPLOYEES

L.P. Roblie, Res. Engr. ..... La Grande ..... (Place), Oregon.
P.O. Box 4B ..... July 6 (Date) 1945.
Baker, Oregon

Dear Sir:

In accordance with instructions received from D.D. Dobbs, Division Engr. the following employees are being transferred to you.

| (Use One Column for Each Employee Transferred) | | | | | |
|---|---|---|---|---|---|
| Name | John L. Johnson | Alvin B. Peterson | | | |
| Classification | Hd. Chainman | Inspector, Gr. 2 | | | |
| Rate of pay on my pay roll | Code I - 160 00 | Code II - 155 00 | | | |
| Last date carried on my pay roll | July 6 | July 6 | | | |
| Monthly premium rate for group insurance | | 0.75 | | | |
| Name of insurance company | | Calif. Western States | | | |
| Name of hospital association | O.P.S. | M.H.A. | | | |
| Insurance deduction made to end of what month | | July | | | |
| Hospital association dues deducted to end of what month | July | July | | | |

Remarks:

**Noted:**

..... Personnel Director

O.J. Pratt (Name)
Res. Engr. (Title)

**Instructions:** Prepare in quadruplicate. Send original copy to person to whom employees are being transferred. Send duplicate copy to Accounting Division at Salem, and triplicate copy to Division Engineer. Retain quadruplicate copy.

STATE PRINTING DEPT

CONSTRUCTION DEPT.
FORM E-219 2M 10-41

FILE NO. _____

OREGON STATE HIGHWAY DEPARTMENT
RECORD OF EMPLOYMENT

NAME Robert I. Boxer

PERMANENT ADDRESS 421 Grade St, Eugene, Ore. PHONE 438

NAME AND ADDRESS OF NEAREST RELATIVE Geo. B. Boxer, 421 Grade St., Eugene

AGE 27 HEIGHT 5' 10" WEIGHT 170 MARRIED No NO. DEPENDENTS None

CITIZEN OF U. S.? Yes YEARS IN U. S. 27 YEARS IN OREGON? 27

YEARS IN HIGH SCHOOL 3 COLLEGE 1 COURSE C.E. DEGREE No

CORRESPONDENCE SCHOOL _____ COURSE TAKEN _____ % COMPLETE _____

REPORTED TO ME ON Feb. 20, 1940 AS Chainman

CLASSIFICATION CHANGED TO Computor ON July 1, 1941

POSITION HELD LAST UNDER MY CHARGE Computor

NOW BEING transferred TO R.C. Cold LOCATED AT Roseburg AS Computor

REASON FOR CHANGE: [X] TRANSFERRED [ ] RESIGNED [ ] DISCHARGED [ ] PROMOTED [ ] ILL

EFFECTIVE DATE OF THIS CHANGE Dec 1, 1944 [ ] WORK COMPLETED

INSTRUCTIONS: START CARD ON DATE EMPLOYE REPORTS. HOLD UNTIL CHANGE IS MADE, THEN COMPLETE CARD AND FORWARD TO DIVISION ENGINEER IMMEDIATELY.

SIGNED O.B. Brown
ENGINEER IN CHARGE

STATE PRINTING DEPT.

## PERSONNEL RATING SCHEDULES

### SCHEDULE NO. 1 CLASSIFICATION

NAME Robert I. Boxer CLASS'N 1

| | | | | X | Y | Z |
|---|---|---|---|---|---|---|
| 1 | PERSONAL CHARACTER AND INTEGRITY | SATISFACTORY | 20 | 20 | | |
| | | UNSATISFACTORY | 0 | | | |
| 2 | PHYSICAL FITNESS | FIT FOR ALL | 20 | 20 | | |
| | | FIT FOR LIMITED | 10 | | | |
| | | UNFIT | 0 | | | |
| 3 | GENERAL DEPENDABILITY, (RELIABILITY, ACCURACY, PUNCTUALITY, ETC.) | EXCELLENT | 30 | 25 | | |
| | | GOOD | 20 | | | |
| | | FAIR | 10 | | | |
| | | POOR | 0 | | | |
| 4 | INDUSTRY | EXCELLENT | 30 | 25 | | |
| | | GOOD | 20 | | | |
| | | FAIR | 10 | | | |
| | | POOR | 0 | | | |
| 5 | JUDGMENT | EXCELLENT | 30 | | | |
| | | GOOD | 20 | 20 | | |
| | | FAIR | 10 | | | |
| | | POOR | 0 | | | |
| 6 | INITIATIVE, MENTAL ALERTNESS, AND WILLINGNESS TO ASSUME RESPONSIBILITY | EXCELLENT | 30 | 30 | | |
| | | GOOD | 20 | | | |
| | | FAIR | 10 | | | |
| | | POOR | 0 | | | |
| 7 | COOPERATION WITH ASSOCIATES | GOOD | 20 | 20 | | |
| | | FAIR | 10 | | | |
| | | POOR | 0 | | | |
| 8 | PERSONALITY AND TACT | GOOD | 10 | | | |
| | | FAIR | 5 | 5 | | |
| | | POOR | 0 | | | |
| 9 | QUALITY AND NEATNESS OF WORK | GOOD | 10 | 10 | | |
| | | FAIR | 5 | | | |
| | | POOR | 0 | | | |
| | TOTALS, SCHEDULE NO. 1 | | | 175 | | |

REMARKS: (EXPLANATION MUST BE MADE HERE IF DISCHARGED FOR ANY REASON) _____

X BY Brown Y BY _____ (DIVISION ENGR.) Z BY _____ (CONSTRUCTION ENGR.)

# SECTION 5. LOCATION SURVEYS

*Article*

1. Authority for Survey.
2. Relations With Property Owners.
3. Reconnaissance Surveys.
4. Reconnaissance Report shall Include.
5. Preliminary and Location Surveys.
6. Stationing.
7. Horizontal Curves.
8. Stakes and Hubs.
9. Transit Points.
10. Chaining.
11. Angles.
12. Accuracy of Survey.
13. Lamberts System of Projection.
14. Bearings.
15. Section Ties.
16. Survey References.
17. Location of Permanent Monuments.
18. Azimuth to Monuments.
19. Moving Permanent Markers.
20. Reference Monuments.
21. Monuments Found in Bad Order.
22. Identify Monuments.
23. All Permanent Monuments to be Shown on Maps.
24. Obtain Permission if Necessary to Set Monuments on Private Property.
25. Standard Monument Construction.
26. Standard Monument Guard Posts.
27. Level Line Datum.
28. New Level Lines.
29. Accuracy of Bench Mark Levels.
30. Adjustments of Level Circuits.
31. Reports on Bench Mark Recoveries.
32. Topography to Include all Physical Features.
33. Sketch Topograph in Field on "P" Lines.
34. Road Approaches.
35. Change in Grade on City Streets.
36. Mile Posts.
37. General Instructions for Surveys.
38. Location Cross-sections.
39. Earthwork Computation Sheets.
40. Location Mass Diagrams.
41. Profile.
42. Grade Lines.
43. Comparison of Lines.
44. Projected Lines.
45. Location Survey Records to be Submitted.
46. Classification on Surveys.

## LOCATION SURVEYS

### Article 1—Authority for Survey

(a) Before starting a survey, either reconnaissance, location, revision, quarries, stockpile sites or for any other purpose, an authority for survey must be submitted to and approved by the State Highway Engineer. This is to be made on Form E-39, Authority for Survey, in triplicate, and should show all information called for on the form. It must be used for all surveys except where they are covered by a previous authorization or are properly a part of the construction engineering.

(b) Accurate costs of the survey as it progresses will be kept by the field engineer. If it is found that the survey cannot be completed within the amount set up, request for additional authorization will be made on the same Form E-39, showing the revised estimate for completion of the survey and accompanied by a letter explaining the reasons for the request for additional authorization.

### Article 2—Relations With Property Owners

(a) Nearly all surveys are made on property not yet acquired by the State. Occasionally a property owner will be found to object to a survey being made across his property. The Locating Engineer usually has some knowledge of any unfavorable attitude on the part of the property owners, and in such cases the owner should be contacted and his permission secured for making the survey, explaining as far as practical the reasons why it is necessary to enter the property. If the permission is definitely refused, a traverse around the property may be made if practicable, the Division Engineer notified and further work within the limits of the property in question delayed until instructions are received from the Division Engineer.

(b) In all cases care must be taken that the least possible injury or damage will be done to property. An account will be kept of apparent damage, whether necessary for the progress of the survey or accidental. Particular care must be taken when crossing fields of growing crops, when going through orchards, and in the matter of cutting merchantable timber or valuable shrubbery. It must be remembered that the State is liable for the cost of all damage done to property by a survey party.

### Article 3—Reconnaissance Surveys

(a) On reconnaissance surveys it is expected that the field information will be only approximate, and therefore, any greater refinement will not be necessary than can be obtained with compass, chain and barometer.

(b) The engineer will provide himself with all available maps of the area to be studied, par-

ticularly those showing topography (such as USGS quadrangles). He shall determine the class of highway and the maximum grade and curvature for which the reconnaissance is to be made from the Division Engineer of the division in which the survey is being made, bearing in mind that the maximum is to be used only where the use of anything below the maximum will materially increase the cost.

**Article 4—Reconnaissance Report Shall Include**

(a) A small scale map of the area, usually on a scale of 2,000 feet to the inch. It should be as complete as the scale and information secured will allow. This map should show all lines investigated, giving mile posts, mileage, and equations at junctions; it should also show quarry sites and gravel pits, all prominent topographical and cultural features, such as streams, ridges, towns, railroads and existing roads, trails and highways, elevations of summits, stream crossings, etc. The map is to be made in size that can be folded to standard 8½" x 11" letter size.

(b) A condensed profile, separate or preferably a part of the above map on a scale of 500 feet to the inch vertical and 5,000 feet to the inch horizontal. This also should be made to a size that can be folded to letter size if separate from the map.

(c) A small scale map, preferably on sheet 8½" x 11", or multiple, showing lines only, with total cost by sections, and mileage of sections.

(d) A written report containing a description of each route must be given, calling attention to all unusual or extraordinary conditions affecting cost of construction or maintenance, such as:

Highway and railroad crossings.
Snow exposure, with particular reference to drifting.
Navigation channels.
Proposed and existing dam locations.
Scenic values.
Volume of traffic.
Possibility of freeway where Class A or B highways are being considered.
A detailed estimate of cost of each route by miles, summarized by sections between junction points. A tabulation of length, rise and fall, length and amount of maximum grade, total curvature, class of roadbed, maximum curvature, and total cost for each route or combination of routes. Description of materials for surfacing and their location.

**Article 5—Preliminary and Location Surveys**

Before starting a location survey, the engineer should thoroughly study the reconnaissance reports, and satisfy himself that the conclusions of the reconnaissance engineer are sound. He should note if any natural or artificial conditions have been changed since the reconnaissance was completed and determine their effect on the conclusions of the reconnaissance engineer.

If it is decided that one particular route shown in the reconnaissance report is much superior to any other, the procedure is simplified, and his work becomes more a matter of detail. In this case, he will run a preliminary transit line, take topography enough to cover all possible projections along the route. Soil samples should be taken as early as possible in order that the information be at hand when projections for locations are made.

A map on a scale of 100 feet to the inch shall be started at the time of beginning the work, and all information platted on this map as fast as it is received from the field. After this work is done, as many tentative locations may be projected as seem necessary to determine the best possible location. Profiles of these projections should be made. A study of these projections will enable the locator to make the choice of the final location.

The projected lines may be computed and the courses run in directly or, in open country it may be easier to scale off the distances on the map and locate the P. I.'s or other points on the ground, connecting up with the tangents as projected. With either method ties should be taken at frequent intervals in order to be certain that the located line bears the same relation to the preliminary that the projected line does. Since the map is made from coordinates of the preliminary line, these ties are necessary in order that the located line be shown on the map in its true relation to the preliminary line and the topography.

**Article 6—Stationing**

On all new work, and as far as possible on old work, stationing will run from north to south and from west to east. Stationing shall be continuous, a revision starting with the stationing of the point of beginning on the old line, enough of which should be shown on the map to clearly show the tie to the old work. An equation shall be made in stationing at the point of divergence, even though the stationing used is identical. The relation of the bearings used on the old and new lines should also be clearly shown. The above applies to both preliminary

and located lines, which shall be differentiated in the field, and in the notes and on the maps by using the prefix P for preliminary lines and L for located lines. If more than one preliminary line or located line is run, the additional lines shall be designated $P^2$, $P^3$, $L^2$, $L^3$, etc. The first P or L line is presumed to be the $P^1$ or $L^1$ line, but it is not necessary to so designate it. Only actual preliminary lines should be called P lines and only actual staked located lines as L lines. Lines run merely as bases for taking topography shall be called T lines. The stationing of all additional P, T or L lines shall be continuous with the stationing of the main line from which they diverge with the equation shown at point of junction. Projections before staking as locations or those projections not staked shall be designated as A, B, C, D, etc., lines and in some cases carry names in addition to the letter. Equations and angle ties or equations in bearing should be shown at intersections of all lines and more particularly where preliminary and located lines tie into previous work. If the old lines cannot be recovered then an approximate equation shall be given and noted as approximate. Where a new line crosses an existing road, obtain center line stationing of both roads at the point of intersection and show on maps and profiles of the survey.

### Article 7—Horizontal Curves

All curves shall be spiraled and so shown on the plans submitted. This applies to secondary as well as to primary highways, except that on some of the less important secondary highways where the alignment is of a very low standard, spirals may be omitted but only upon the approval of the Construction Engineer.

The highway spiral as adopted by the Oregon State Highway Commission is printed in book form and may be requisitioned from the Equipment Department. These books will be charged to the engineer or other person in charge, and he will be held responsible and accountable for the book.

The minimum degree of curve, consistent with right of way conditions and the topography, will be used in all cases.

Curves shall be calculated on the basis: That the radius of a one degree curve equals 5729.58 feet, and that of any other curve is inversely proportional to the degree of curve.

The chord length used in measuring a curve should approximate the length of the true arc as closely as is practicable without causing a material error; therefore, the following lengths shall be used: For all curves up to an eight degree, 100-foot chords; from 8 to 16 degree, 50-foot chords; from 16 to 32 degree, 25-foot chords; and from 32 to 56 degree, 10-foot chords.

The maximum degree of curve allowed will be found in "Roadbed Design Standards" (Section 10), except as it may be modified by the State Highway Engineer. At all times effort should be made to obtain the flattest curve possible, considering cost, and the maximum allowed is to be used only when its use will materially reduce the cost.

The use of compound curves will be permitted only upon approval of the Construction Engineer.

### Article 8—Stakes and Hubs

The stakes used for the survey should be of durable wood. Marker stakes to be ¾" thick by 2" wide, surfaced on both sides, and 18" to 22" long. Hubs used for transit points should be 2" by 2" and 12" to 18" long.

When working in timbered country, it is sometimes possible to obtain cedar or straight grain fir along the line. When such is the case, it is desirable that this material be utilized for stakes and hubs.

Cup hubtacks shall be used in setting transit points.

Hubs for transit points shall be driven flush or slightly below the ground surface.

A guard stake shall be placed approximately 18 inches from all transit points and should slant toward the hub and have the index letter of the line and the station number marked on the side facing the point. On preliminary lines the guard stake shall be marked on the back with a circle having a dot in the center to indicate a point on tangent. The guard stake for a P. O. T. should be set to the left of the point. A triangle with a dot in the center will be used to indicate an angle point and shall be set on the outside of the angle. On located lines the initials of the words designating the point, such as, P. T., P. S., P. O. T., etc., shall be marked on the back of the guard stake.

Stakes shall be set at full stations and plus fifty points, except that where the ground is very uniform on tangents, the plus fifty point may be omitted.

Black crayon is preferable to blue for marking stakes. Station or points chained to shall be marked by a small wood plug driven flush

with the ground at the exact point measured to and the marker stake placed about 3 inches ahead of the point. Where the ground is too hard for driving stakes, as in surfacing or pavement, a nail driven through a tin washer will identify the spot for future reference. In this case the marker stake will be offset, facing toward the line, with offset distance marked in a circle near top of stake.

### Article 9—Transit Points

Transit points should be chosen so the hub is not likely to be disturbed. In cultivated country they may be placed near cross fences where they are not likely to be plowed out or otherwise disturbed. If the transit point is anything else than a hub the notes should show it as such.

### Article 10—Chaining

The head chainman should be alert and active as the progress of the party depends a great deal on his ability to line himself in quickly and keep the axemen on line and the chaining up with them. He should be able to pick out suitable places for transit points which will afford as long a sight distance ahead as possible.

Chainmen must use plumb bobs each time a measurement is made, and both chainmen should call their respective stations. The rear chainman should see that the stake has been marked correctly.

On surveys where more than average accuracy is necessary, such as base lines for triangulations and surveys through congested areas, correction for temperature shall be made on distances between transit points if the temperature varies more than 10 degrees from the standard of 68 degrees.

For steel tapes up to 100 feet supported throughout, a pull of 10 pounds shall be used; any distances over 100 feet shall be measured with a 20-pound pull. For tapes supported only at the zero and 100-foot points, a pull of 22 pounds should be used.

### Article 11—Angles

The measurement of angles shall be repeated a sufficient number of times to insure a high degree of accuracy. On preliminary lines and other lines used as a base for surveys, the angle should be turned at least 12 times and the accumulated vernier reading reduced to an average. On surveys tied to the Lambert system of coordinates, the above is especially important. In turning a "set" of angles it is essential that the transit be reversed for one-half the number of angles turned to eliminate any error that may be in the instrument.

### Article 12—Accuracy of Survey

It is expected that surveys will close with an error of not more than 1 in 5,000.

### Article 13—Lamberts System of Projection

The system of Lamberts projection shall be used on location surveys whenever possible. Ties shall be made to existing triangulation stations and Lamberts coordinates for convenient points shall be calculated for use as a basis for the plane coordinates to be used throughout the survey. Azimuths to be used along the traverse shall also be determined from these triangulation computations. For long surveys it is advisable to make additional ties to the basic triangulation network at intervals along the route of the survey and establish other triangulation stations. These are useful in checking the work accomplished and help to keep the survey within the allowable limits of error. If the survey extends more than 10 miles from a triangulation tie and another tie is impossible then a solar or polaris observation should be made to furnish a check on the azimuth.

When establishing a triangulation station, for use as a basis for coordinates and azimuths, consideration should be given to the permanence of the location as well as to its convenience to the line. A little investigative field work in this respect will be found beneficial. It should be borne in mind that the triangle which is nearest to equilateral will lend itself best to angle adjustment. Sharp angles are to be avoided. Occupy as many known triangulation stations as possible when tying in a new station and distribute the error in angle closure among the angles. For ordinary work spherical excess may be disregarded. Third order accuracy requires that the angle error should not be greater than 6-seconds and the distance closure not more than 1-foot in 5,000.

Measurements of the angles involved in triangulation shall be accomplished by "winding" and "unwinding" the angle on the plate at least six times with the telescope direct and six times with telescope inverted. It will be found advantageous to start the plate readings at some arbitrary reading near zero rather than to try to set

on exactly zero. This system assists the observer when making his final reading.

Newly established triangulation stations shall be marked with the standard bronze triangulation monument disk (available on order to the Salem Shops) and the usual white guard post shall be set beside it. Names for such new stations may be recommended but must be approved by the Construction Engineer before the actual stamping is done in order that duplication of names may be avoided as far as possible. A description of the new station, including complete details regarding the route to be followed in reaching it from some well known town, shall be furnished to the Construction Engineer for forwarding to the USC&GS. Also, whenever one of the known triangulation stations is occupied and the description is found to be inadequate or need revision, a report shall be made of the true circumstances so that the records can be corrected.

While the new triangulation station is being occupied, permanent azimuth mark shall be set either on line or on some easily referenced point and the azimuth of the line to it determined for use on all future work. This furnishes a local grid azimuth which can be used directly in the extension of coordinates to future points along any traverse in that immediate area.

Maps shall be drawn to the Lambert coordinate base and this fact shall be noted in the title. A sketch of the triangulation ties shall also be given either on the map or on a separate sketch and all angles and distances shall be included. Section corners and other monuments tied into the survey shall have their Lambert coordinates shown directly on the map along with the angle ties to them. Both grid bearings and true bearings shall be determined and shown on the maps for use in property descriptions and for future reference. Care must be exercised that the two sets of bearings can be easily distinguished from one another.

Further information regarding the use of the Lambert Projection, including tables, maps and explanatory information, will be found in the Construction Department letter dated May 1, 1944. Copies of this letter are available at the Salem office.

All lines shall be platted by coordinates, using the Lambert system where possible. Ties should be made to all permanent monuments within reasonable distance or visibility. All grid bearings shall be marked (Grid) on the detail map. After final location is made, azimuths of tangents shall be converted to true bearings, taking into consideration convergence of the meridians, and the proper equations shown.

### Article 14—Bearings

Where azimuths cannot be obtained from lines between triangulation stations, true bearings shall be obtained by observations on Polaris and an equation between the original bearing given at the beginning and end of the survey. In addition, equations in bearing shall be given at the nearest property line where the convergence of meridian amounts to as much as one minute. In short all bearings of all surveys should check the true astronomic bearing within one minute.

All ties, etc., obtained from sources other than actual field work are to be shown on the map, enclosed in parentheses. Where there is a difference between the field and deed or plat records, both should be shown, the field work in the regular manner and the deed or plat data in parentheses.

Extreme care should be taken that all bearings shown whether grid or true, are accurate. In some instances descriptions might be written based on State Highway bearings and conflicting with deed descriptions or other surveys where those might be more accurate than our own. There should never be any doubt as to the absolute accuracy of any bearing shown on a State Highway survey.

The source from which bearings are taken should be shown on all 100-foot maps.

### Article 15—Section Ties

Transit ties shall be made to all section subdivision corners that might affect the lines of any property crossed by the survey. It will not be necessary to show the actual field tie to corners on the map, but the station of the intersection of centerline of the survey and the subdivision line, the angle of the intersection, and the computed distance from the intersection to the corners, on both sides of line, shall be shown on the 100-foot detail map. Intersections on curves shall be computed and angles shown to the tangent of the curve.

### Article 16—Survey References

Generally it will not be necessary to reference preliminary lines, but if considerable time is to lapse until the location is made, all transit points on the preliminary location shall be referenced.

Reference points shall be placed well out of the way of construction operations.

When practicable, line points should be cross referenced with the reference lines placed at approximately ninety degrees to each other, and should consist of four points, with the point being referenced in line with the two legs of the cross reference. The included angle should be recorded as well as the angle from the tangent to the nearest reference line.

Reference hubs should be sound durable wood and long enough so when driven down flush with the ground surface they will be firmly set. The distance to reference points should be carefully noted, in case the points on one reference line are disturbed or lost, the alignment point can be re-established by measuring on the other line. In timbered country the farther reference points should preferably be placed on the side of trees, or on stumps if the wood is sound.

All reference points shall have guard stakes placed near them, on which shall be marked the letters R. P., initial of the line, station and kind of point referenced, as R. P. P. S. $L^a$ 148 + 26.61.

### Article 17—Location of Permanent Monuments

Ties shall be taken to all existing monuments adjacent to the line of survey. Enough permanent monuments shall be established to adequately and permanently reference the line.

Permanent monuments shall be placed in such a way that they will serve as a reference mark for the horizontal control as well as for vertical control, taking care always that the position chosen is well outside possible interference from construction. Wherever possible, the point of intersection of tangents, a point on a semi-tangent, or semi-tangent produced shall be used as location for such permanent monuments. In the case of tangents exceeding one mile in length, the monuments may be set to mark the right of way line.

### Article 18—Azimuth to Monuments

Each permanent monument shall have at least one azimuth mark, preferably the next monument along the line, but if this is not visible, the azimuth shall be taken to the best and most easily identified mark available, even a nail in the blaze on a tree if nothing better can be found.

### Article 19—Moving Permanent Markers

Before moving a permanent monument, it shall be referenced so that it may be accurately re-established. In some cases where the mark is to be slightly covered and not subject to further disturbance, it may be better practice to set reference marks indicating the position of the original mark.

### Article 20—Reference Monuments

If it is found necessary at any time to construct reference monuments for re-establishing permanent monuments they shall be constructed in the same manner as permanent monuments.

### Article 21—Monuments Found in Bad Order

Permanent monuments found in bad order or below standard shall be repaired.

### Article 22—Identify Monuments

The greatest care should be taken to properly identify marks. A thorough examination should be made of all stampings on the posts or plugs and these stampings should be incorporated in the notes submitted. Errors frequently occur due to failure to identify marks properly. Particular care must be taken to differentiate between USGS and USC&GS marks. Be sure that you do not classify a reference point as a main station. The reference disks have an arrow cast in the top instead of a triangle.

### Article 23—All Permanent Monuments to be Shown on Maps

All permanent monuments shall be shown on the location maps, both one hundred foot and four hundred foot, but ties may be omitted on the four hundred foot map.

### Article 24—Obtain Permission if Necessary to Set Monuments on Private Property

When permanent monuments are placed before purchase of right of way, or if placed outside the right of way, permission must be obtained from the property owner. As far as possible, however, monuments must be within or on the line of the right of way.

### Article 25—Standard Monument Construction

Each control or reference line monument shall be of good quality concrete and shall be constructed in place. It shall be not less than twelve inches square at the top, enlarging toward the base on a batter of one inch per foot. It shall have the top at or slightly above the surface of the ground. Its depth in the ground will vary with ground conditions, but shall generally be

3 feet in western Oregon, and in the higher mountains and eastern Oregon 3½ feet or more. A standard bronze disk requisitioned for such purpose from the equipment department will be set in the concrete, flush with the top of the monument, on which after the concrete has hardened, the tangent will be defined.

### Article 26—Standard Monument Guard Posts

Standard guard posts for identifying permanent monuments shall be requisitioned from the Sign Department.

Installation of guard posts shall be made by the resident or locating engineers' forces before submission of the final records.

All guard posts shall be located two feet from the monument and at the depth indicated on the following sketch. This applies to permanent monuments only and not to right of way markers.

### Article 27—Level Line Datum

The datum of all levels shall be based upon the sea level elevation established by the USC&GS in 1929. Information as to the location and elevation of monuments on this datum may may be found in U. S. Coast and Geodetic Survey Special Publication No. 177 and in subsequent mimeographed publications, copies of which are available on request to the Construction Engineer. It is believed that the 1929 adjustment will be final and the use of the expression "U. S. 1929 Datum" will indicate that profiles and records are in harmony with the elevations in Special Publication No. 177. If other datum is used, it shall be indicated on all records. An index of S. P. No. 177 and subsequent publication follows.

### INDEX TO LEVEL LINES

Except in some minor cases, all the elevations are on the standard 1929 general adjustment of leveling in the United States, and are in agreement with Special Publication 177 and with Supplement 1 thereto, both of which publications are issued by the U. S. Coast and Geodetic Survey. An abstract of lines in SP 177 is given at the end of this index.

*Data given in the following lists supersedes that given in S. P. 177 or supplements thereto.*

Lines marked with the letter "S" are supplemental lines and include intermediate and reference marks not leveled on by U. S. Coast and Geodetic Survey.

| *Line* | *Territory* | *Date* |
|---|---|---|
| 1 | Biggs to Ontario | |
| | Biggs to Shaniko Section | 5– 5–39 |
| | Shaniko to Prineville Section | 10–10–39 |
| | Prineville to Paulina Section | 4–15–42 |
| | Paulina to Oakerman Ranch Section | 7– 1–39 |
| 2 | Wallula, Wash. to Owyhee, Idaho (Part) | |
| | Pendleton to La Grande Section | 1 –1–42 |
| | La Grande to Baker Section | 1– 5–42 |
| | Baker to Huntington Section | 3– 5–42 |
| | Huntington to Nyssa Section | 2–10–42 |
| 4 | Klamath Falls to Ontario | |
| | Oregon State Experiment Station Spur | 4–20–37 |
| 4 S | Antelope Creek to Lakeview | 9–20–39 |
| 6 | Weed to Portland | |
| | Albany to Portland Section | 9–30–40 |
| 6 S | Eugene to Albany Section | 2– 5–40 |
| 6 S | Albany to Salem Section | 8–31–40 |
| 7 | Portland to Fort Stevens | |
| | Portland to Rainier Section | 5– 1–42 |
| | Rainier to Clatskanie Section | 6–10–42 |
| | Clatskanie to Fort Stevens Section | 5– 1–42 |
| 8 | Portland to Wallula | |
| | Portland to Cascade Locks Section | 2–20–42 |
| | Cascade Locks to Mosier Section | 2– 1–42 |
| | Mosier to Rufus Section | 2– 1–42 |
| 9 | Bend to Prineville | 40–20–42 |
| 12 | Astoria to Crescent City (Part) | |
| | Astoria to Tillamook Section | 9– 1–41 |
| | Tillamook to Newport Section | 7–25–41 |
| | One-page Supplement | 3–20–43 |
| | Newport to Florence Section | 7–20–41 |
| | Glenada to North Bend Section | 7–15–41 |
| | Cape Arago Spur | 7–25–41 |
| | North Bend to Bandon Section | 3– 1–42 |
| | Bandon to Brookings Section | 7–15–41 |
| 14 | Hebo to Salem | 6–10–41 |
| 15 | Newport to Albany | 6–10–41 |
| 16 | Reedsport to Drain | 4–20–41 |
| 23 | Prineville-Ashland | |
| | Prineville to Bend Section | 3–20–42 |
| 23 S | Fort Klamath to Lake of the Woods Section | 9–15–38 |
| 28 | Pendleton to Lewiston (Oregon Part) | No Date |
| 28 S | Pendleton to Lewiston (Oregon Part) | 10– 1–39 |
| 31 | La Grande to Clarkston (Oregon Part) | 1– 1–41 |
| 32 | Heppner Junction to Nye via Heppner | 1–20–38 |
| 33 | Heppner to Spray | 12–15–42 |
| 34 | Mills Ranch to Logdell | 11– 1–42 |
| 35 | Rolyat to Kirk | 5– 6–37 |
| 36 | Chemult to Eugene | 2–20–38 |
| 37 | Eugene to Cushman via Veneta | 1–20–40 |
| 38 | Portland to Wheeler via Timber | 11–25–41 |
| 39 | Clatskanie to Buxton | 5–10–40 |
| 40 | Hillsboro to Wren via Rickreall | 5–25–40 |
| 41 | Dallas to Toledo via Falls City | 5– 1–40 |
| 42 | McMinnville to Aurora | 2– 1–40 |
| 43 | Portland to Maupin | 10–20–39 |
| 43 S | Portland to Maupin | 4– 5–39 |
| 44 | Government Camp to Hood River | 10–21–36 |
| 44 S | Government Camp to Hood River | 7– 5–38 |
| 45 | The Dalles to Prineville Junction | 5–15–39 |

| Line | Territory | Date |
|---|---|---|
| 46 | Prineville South to Central Oregon Highway | 1–10–38 |
| 47 | South Junction to Shaniko | 10– 1–43 |
| 48 | Umatilla to Pendleton via Echo | 11–10–37 |
| 49 | Burns to Fields | 3–10–38 |
| 50 | Wagontire to Princeton | 3–15–38 |
| 52 | OO Ranch to Willow Ranch (Oregon Part) | 3–10–38 |
| 53 | Chandler X L Ranch to Government Well | 3–10–38 |
| 54 | Harper to Rome via Folly Farm | 7– 1–38 |
| 55 | From South of Scott Ranchhouse to near Denio | 5–10–39 |
| 56 | Nyssa to Amos (Oregon Part) | 5– 5–39 |
| 57 | Whitehorse Ranch southeast to McDermitt road Junction | 7–10–38 |
| 59 | Mitchell to Service Creek | 1–10–38 |
| 60 | Antelope to Mitchell | 4–20–39 |
| 61 | Silver Lake to Bly | 12–20–37 |
| 62 | Turner to Sisters | 9–15–41 |
| | Two-page Supplement | 8–10–42 |
| 100 | Portland to Warrendale | 12– 1–39 |
| 101 | Portland to Astoria | 3–25–40 |
| 102 | St. Helens to Pittsburg | 9–20–38 |
| 103 | Portland to Forest Grove via Gales Creek | 9– 1–41 |
| 104 | East St. Johns to Lents via Montavilla | 9–15–40 |
| 104 A | Sellwood to Oregon City via Lents and Clackamas | 4–20–40 |
| 105 | Portland to Oregon City via Oswego | 1–10–41 |
| 106 | Oregon City to Crabtree via Silverton | 5–15–40 |
| 107 | Portland to Junction City via Rickreall | |
| | Portland to Rickreall | 9–25–40 |
| | Monmouth to Junction City Section | 7–25–40 |
| 108 | Otis to Valley Junction | 5–15–40 |
| 109 | Portland to West Portland and Beaverton | 7–31–42 |
| 110 | Portland to Oregon-California State Line | |
| | Portland to Oregon City Section | 2–25–40 |
| | One-page Supplement (Page 4) | 11–15–40 |
| | Oregon City to Salem Section | 10–20–40 |
| | Salem to Jefferson Section | 5– 1–45 |
| | Drain to Siskiyou Section | 11– 1–38 |
| 111 | Portland to Kelso via Damascus | 10–10–42 |
| 112 | Sellwood to Southeast Powell Blvd. | 7– 1–38 |
| 113 | Wallace Bridge to McMinnville | 3–15–43 |
| 114 | Kernville to Siletz | 1–15–40 |
| 115 | Portland to Troutdale via Sandy Bridge | 7–27–40 |
| 116 | Halsey to Sweet Home | 3– 1–40 |
| 117 | Waldport to Corvallis | 4–10–40 |
| 118 | Junction City to Florence | 2–20–40 |
| 119 | Cottage Grove to Disston | 7– 5–38 |
| 120 | Dallas to Kings Valley | 6– 1–40 |
| 121 | Goshen to Oakridge | 2– 5–40 |
| 122 | Brunks Corner to Independence | 12–29–39 |
| 123 | Eddyville to Blodgett | 5–25–40 |
| 124 | Sylvan to Holbrook via Skyline Boulevard | 11–30–40 |
| 125 | Coos Bay to Scottsburg | 6–20–38 |
| | One-page Supplement | 3–15–42 |
| 126 | Elkton to Sutherlin and Millwood Spur | 12– 1–42 |
| 127 | Roseburg to Glide (Subject to Revision) | 4–10–37 |
| 128 | Wilderville to Medford via Provolt | 1–10–40 |
| 129 | Merlin west toward Almeda | 6–12–37 |
| 130 | Eagle Point to Lake of the Woods | 10–31–37 |

| Line | Territory | Date |
|---|---|---|
| 131 | Sycamore to Mount Hood Loop via Haley | 1–20–40 |
| 132 | Albany to Sisters | |
| | Albany to Lebanon Section | 11–15–41 |
| | Lebanon to Santiam Junction Section | 4– 1–42 |
| | Upper Soda to Sisters Section | 4– 1–42 |
| 133 | Gold Hill to Eagle Point | 4–25–37 |
| 134 | Olmstead to Fox Butte | 7– 1–39 |
| 135 | Percival Ranch south toward Christmas Lake | 3–15–38 |
| 136 | Lakeview to Warner Canyon | 7– 1–39 |
| 137 | Chiloquin to Sprague River | 3– 1–44 |
| 138 | Klamath Falls to Rocky Point | 7– 1–38 |
| 139 | Dairy to Beatty | 9–20–41 |
| 140 | Bend to Vale via Central Oregon Highway | |
| | Bend to Millican Section (Includes sections to Gap Ranch) | 6–20–37 |
| | Page 8 A, Vicinity of Gap Ranch | 7– 1–39 |
| | Burns to Buchanan Section | 2–25–38 |
| | Nigger Flat to Juntura Section | 9–15–39 |
| 141 | Forest Boundary south to Long Creek | 7– 1–38 |
| 142 | Prineville to Madras | 8–20–42 |
| 143 | Maupin to Shaniko via Bakeoven | 3–15–43 |
| 144 | Prineville north toward Ashwood | 5–20–37 |
| 145 | Bear Creek bridge to Post via Crooked River | 7– 1–39 |
| 146 | Wasco to Shaniko | 5– 5–39 |
| 147 | Mission to Bingham Springs | 11– 1–37 |
| 148 | Pendleton to Ontario via Oregon Trail | |
| | Pendleton to La Grande Section | 10–20–37 |
| | Hot Lake to Baker Section | 10–10–40 |
| | Huntington to Ontario Section | 7–30–42 |
| 150 | Union to Baker via Medical Springs | 6–20–37 |
| 155 | Princeton to Frenchglen Highway Junction via Barton Lake | 7–25–42 |
| 157 | Oakerman Ranch to Valley Falls | |
| | Oakerman Ranch to Wagontire Section (Includes Wagontire to Coleman Hills Section) | 3–10–38 |
| | Pike Ranch to Valley Falls Section | 6–15–39 |
| 159 | Dairy to Bonanza | 11–10–40 |
| 160 | Klamath Falls and Vicinity | 11–15–40 |
| 161 | Klamath Falls to Malin | 6–25–40 |
| 162 | Hood River Valley | 10– 1–39 |
| 200 | Chemawa to Newberg | 10–25–40 |
| 201 | Newberg to Aurora via Butteville | 5–25–40 |
| 202 | Wilsonville to Newberg | 2–25–38 |
| 203 | Dayton to West Salem | 11– 1–39 |
| 204 | Oakridge to Eagle Butte Damsite | 2–20–38 |
| 205 | Chemawa to Silverton | 6– 1–40 |
| 206 | Marion to West Stayton | 6– 1–40 |
| 207 | Dayton to Amity via Dayton Prairie | 2– 1–40 |
| 208 | Wheatland to Hopmere | 6– 1–40 |
| 210 | West Portland to Hubbard | 1–15–40 |
| 211 | Canby East along Fenton Road | 10–10–40 |
| 212 | Tillamook to Forest Grove via Wilson River | 5– 1–43 |
| 213 | Wolf Creek Highway | |
| | Necanicum Junction to Quartz Creek | 6–15–40 |
| | Supplement (Including line to Jewell) | 2–20–42 |
| 214 | Astoria to Mist via Nehalem Highway | |
| | Youngs River Loop | 1–31–41 |
| | Astoria to Mist | 7–10–42 |

| Line | Territory | Date |
|---|---|---|
| 215 | Willamette River and Vicinity | |
| | Corvallis to Albany Section | 4–10–40 |
| | Albany to West Salem Section | 7–15–40 |
| | Salem to Newberg Section | 9–25–40 |
| 216 | Stayton to Clear Lake via Detroit | 10–15–40 |
| 218 | McMinnville Quadrangle | 11– 1–38 |
| 251 | Estacada Southeast to Skyline Road | 10–15–40 |
| 259 | Waldport and Tidewater Quadrangles | 10–15–40 |
| 260 | Stayton Quadrangle | 5–10–40 |
| 261 | Sheridan and Dallas Quadrangles | 12–15–39 |
| 262 | Corvallis Quadrangle | 11–15–39 |
| 263 | Heceta Head and Mapleton Quadrangles | 11– 1–39 |
| 264 | Albany Quadrangle | 9– 1–40 |
| 265 | Mount Angel and Molalla Quadrangle | 12–27–39 |
| 266 | Blachly Quadrangle | 2–25–40 |
| 267 | Oregon City Quadrangle | 11–15–39 |
| 268 | Salem Quadrangle | 9– 1–40 |
| 269 | Tualatin Quadrangle | 7–25–42 |
| 270 | Halsey Quadrangle | 3–10–40 |
| 271 | Elmira and Panther Quadrangles | 1–15–40 |
| 272 | Eugene Quadrangle | 3–15–39 |
| 273 | Monroe Quadrangle | 3–15–39 |
| 274 | Estacada Quadrangle | 6– 5–40 |
| 275 | Wemme to Hood River | 7–15–40 |
| 281 | Elgin to Langdon Lake | 5–20–40 |
| 282 | Bone Spring to Flora | 10– 1–42 |
| 283 | Antelope to Fossil | 7–25–42 |
| 284 | Enterprise to Wallowa Falls | 12– 1–37 |
| 288 | Bend and Vicinity | 11– 1–40 |
| 289 | Sisters to Deschutes | 9–25–38 |
| 290 | Neal Creek Bridge to Chenoweth Creek Bridge | 4–15–37 |
| 291 | The Dalles and Vicinity | No Date |
| 294 | The Dalles-California Highway | |
| | Maupin to Madras Section | 7– 1–40 |
| | Redmond to Bend Section | 11– 1–40 |
| | Klamath Agency to Modoc Point Section | 5–25–40 |
| 295 | Grande Ronde Valley Project | 9– 1–37 |
| 296 | Astoria to Arch Cape | 5– 1–40 |
| 297 | Burlington to St. Helens via Sauvie Island | 12– 1–40 |
| 298 | Hillsboro to Rocky Point and Linnton | 12–29–39 |
| 299 | Paulina Prairie to Evans Well | No Date |
| 300 | Crescent to near Bear Flat | No Date |

Additional lines are being issued as fast as material can be assembled.

Special Publication 177 contains level information for 27 Oregon level lines, but much of the data have been superseded by the lines listed above, and the later information should be used in all cases. The material in SP 177 consists of the following:

| Line | Territory |
|---|---|
| 1 | Biggs to Ontario. Between Biggs and Oakerman Ranch superseded by lines listed above. |
| 2 | Wallula to Owyhee. Between Pendleton and Nyssa superseded by lines listed above. |
| 3 | Weed to Kirk. |
| 4 | Klamath Falls to Ontario. |
| 5 | Bend to Gap Ranch. |
| 6 | Weed to Portland. Between Albany and Portland superseded by lines listed above. |
| 7 | Portland to Fort Stevens. Superseded by lines listed above. |
| 8 | Portland to Wallula. Between Portland and Rufus superseded by lines listed above. |
| 9 | Bend to Prineville. Superseded. |
| 10 | Pendleton to Mount Vernon. |
| 11 | Eugene to Redmond. |
| 12 | Astoria to Crescent City. Superseded. |
| 13 | Arlington to Vale. |
| 14 | Hebo to Salem. Superseded. |
| 15 | Newport to Albany. Superseded. |
| 16 | Reedsport to Drain. Superseded. |
| 17 | Winnemucca to Crane. |
| 18 | Bend to Kirk. |
| 19 | Prineville to Picture Gorge. |
| 20 | Lakeview to Fernley. |
| 21 | John Day to Burns. |
| 22 | Grants Pass to Crescent City. |
| 23 | Prineville to Ashland. Between Prineville and Bend superseded by line listed above. See also Line 23 S. |
| 24 | Medford to Chinchalo. |
| 25 | Lapine to Valley Falls. |
| 26 | Klamath Junction to Klamath Falls. |
| 27 | Coquille to Dillard. |

### Article 28—New Level Lines

Resident and Locating Engineers shall carry accurate levels over their projects and level lines shall begin and end on permanent bench marks. Bench marks of semi-permanent character shall be established not more than 1,000 feet apart and at the crossing of every considerable stream where a structure will be required, and also at some convenient point near the crossing of each existing highway or railroad. These may be nails in roots of trees, marks on large boulders, etc. Marks on telephone and electric power poles, fence posts, etc., are to be avoided wherever possible.

On all work where great accuracy is not required, the rod shall be read to hundredths of a foot on turning points and hubs, and elsewhere to tenths of a foot. A rod reading shall be taken at all line stakes and at intermediate points where the ground surface varies materially from a uniform line between stakes. Readings shall be taken at the crossing of all ditches, fences, telephone, telegraph and power lines, etc. Where the survey crosses a railroad, a reading shall be taken to hundredths of a foot on the top of each rail and to the nearest tenth of a foot on the top of the tie at the intersection of the center lines. Readings shall also be taken along the center line of the track for a distance of approximately 1,000 feet each side of the center line of the survey. (See Section 11, Articles 10 and 11, Vicinity Maps.)

An elevation to the nearest tenth of a foot shall be taken at the water surface of all ponds

and streams. The profile of the stream bed may be taken by soundings if necessary. High water marks shall be determined from the best information available, at all considerable stream crossings.

The center line elevations of intersecting roads shall be taken for a sufficient distance to insure ample data to design a connection to the new highway location.

Before a project is completed, permanent bench marks shall be established and their elevations determined to at least third order accuracy. In selecting sites for permanent bench marks, advantage should be taken of concrete culverts, siphon boxes, bridges and other permanent structures. If no suitable location for a bench mark is available along the right of way, it may be placed on private property after permission has been obtained from the owner. Instructions pertinent to the construction of permanent monuments may be found in Section 5, Articles 25 and 26 and in sketches at the end of the section.

Bench marks that are to be included in the published records of the level network shall not be set on spur shots. Such marks shall be used as a turning point in the line between two established bench marks or as a turning point on a return line to the starting bench mark. Permanent bench marks shall not be established farther apart than one mile.

### Article 29—Accuracy of Bench Mark Levels

Elevations for new bench marks shall be established with Third Order accuracy which permits an allowable error of not more than 0.05 times the square root of the length of the circuit in miles. Divergence between lines run between two marks shall not be greater than 0.035 times the square root of the distance in miles. To attain this accuracy a target must be used and the rod must be read to the thousandth of a foot. Backsights must be balanced for distance and turning points should be carefully selected.

### Article 30—Adjustment of Level Circuits

All level lines except those involving permanent bench marks shall be adjusted in the field. Complete notes for permanent bench level lines shall be forwarded through regular channels to the Construction Engineer for adjustment. These notes will not be considered complete unless they include ties to other permanent bench marks with adjusted elevations.

The level notes shall give the identification numbers stamped on the disk of each permanent bench mark leveled on. The approximate distance between these marks shall also be indicated in order to permit intelligent adjustment of the level circuit.

### Article 31—Report on Bench Mark Recoveries

Locating and Construction Engineers shall conduct a search for and install, wherever needed, a standard 4" x 4" marker post alongside all permanent bench marks throughout the full length of the section being surveyed or under construction.

Upon completion of each survey and construction project, a "Report on Bench Mark Recoveries" form shall be submitted in triplicate.

A "Description of Bench Mark" form E-185 shall be submitted with the level notes for each permanent bench mark established. Identification numbers for such marks will be furnished by the Salem office and these identification numbers shall be stamped in the disks by the engineers' forces along with the year of the installation. Elevations shall not be stamped in the disks without direction from the Construction Engineer.

Whenever a permanent bench mark is destroyed or whenever its description should be revised to meet existing conditions, a "Report on Condition of Bench Marks" form E-186 should be completely filled in and submitted to the Construction Engineer.

### Article 32—Topography to Include all Physical Features

Show all of the physical features that are necessary to make a complete topographical map of the country traversed, to such width on each side of the center line as may be necessary for correct projection of a location. The following are offered as suggestions, and if other features are encountered in the field, they are to be included in the records.

(a) *Fences*—When traversing an existing road, distances shall be taken to the fences at frequent intervals and intersecting fences shall be tied.

(b) *Intersecting Roads*—Intersecting roads should be noted with respect to grade, direction and distance to nearby towns.

(c) *Pole Lines*—Locate accurately the poles of telegraph, telephone and electric power lines, at the points where it may be necessary to move

them. Note the name of the owners, pole numbers, number of wires, etc.

(d) *Buildings, Orchards*—Locate buildings, orchards, improved lands, etc., adjacent to the proposed location and ascertain the names of all owners of such property.

(e) *Show Type of Lands*—Designate whether cleared, timbered, logged-off, burned over or cultivated lands, etc.

(f) *Irrigation Ditches*—Note irrigation or other ditches and show the direction of flow and the grade. Give center line station of crossing.

(g) *Streams*—Note the names of all streams crossed by the line and determine the high and low water stages. Make an estimate of the probable size of opening required. If the stream is crossed by other roads, or a railroad in the vicinity, make a note of the location of the structure and the size of its opening.

(h) *Locate High Water Marks*—Note if the land at a proposed crossing is flooded by backwater. Also note other streams in the vicinity of the line, though not crossed by it, which may affect the location of the proposed road.

(i) *Bridges*—When crossed by center line, give stationing of both ends, width of roadway and type of bridge.

(j) *Character of Country*—Show the character of the country traversed, as clay, rocky, marshy, etc.

(k) *Railroads*—Show center line stationing of both highway and railroad and the angle of crossing. Tie in head block, switches, culverts, bridges, etc.

### Article 33—Sketch Topography in the Field on "P" Lines

All topography on preliminary lines must be sketched in the field on sheets in such a way that it can be transferred directly to the maps. In order to accomplish this, the following method shall be used:

The preliminary line having been accurately platted on the 100-foot to one inch detail map, sections of the line will be accurately traced on sheets of vellum tracing paper approximately ten inches wide by thirty inches long, taking care that the preliminary line is as near the center of the sheet as possible. This may be platted in red ink. Pencil lines are then drawn at right angles to the center line at all even stations and all others where the level notes show it is probable that cross sections should be taken. All angles in the preliminary lines shall be split with a protractor. These pencil lines shall be drawn across the full width of the sheet of tracing paper. The stations and pluses shall be marked at one edge of the sheet and the corresponding elevations at the other edge at the ends of the pencil lines crossing the sheet.

The topographer will then take the sheet into the field, thumb tacking it to a drawing board of convenient size, and as the rodman calls out the different points, scale them accurately on the sheet, and sketch in the contours between the different stations as they appear to him on the ground. This method locates accurately the position of all contours opposite the stations as well as any other method and in addition locates the position of the contours between the stations more accurately than other methods.

In addition to the contours, all cultivation, improvements, natural and artificial topographical features shall be sketched in accurately. Record of the measurements to important features shall be preserved.

When the sheets have been brought in from the field, the draftsman will transfer the topography to the detail maps. This can be done by either of two methods or by a combination of the two. For fairly open topography the contours can be transferred by tracing them with a fairly sharp metal stylus after the sheet has been accurately placed and fastened to the map. The contours will appear on the detail map as slight indentations, which can then be inked. Thin hard carbon paper may also be used, the contours being retraced with a soft pencil. Regular or soft carbon paper will leave smears of carbon on the map. In cases where contours are close together, making indentations hard to follow, the carbon paper method is to be followed.

Great care must always be taken in the field that the stations on which topography is taken correspond exactly to those shown on the vellum tracings and that the topography is taken at right angles to the center line.

Right angle lines can be run by use of two stakes nailed together at exactly right angles to each other, fastened on top of a stick three or four feet long. Nails should be driven in the ends of the stakes for sighting. Very accurate right angles can be turned in the field by this method. For splitting angles, a cardboard protractor can be easily made and used in the same manner.

More important features should be tied in with transit and tape and the notes recorded. (See Sec. 7 for Sample Topog. Sheet.)

### Article 34—Road Approaches

Road approaches shall in general be reconstructed at the original location to fit the new grade. However, they should be placed in the most convenient places for the owner's use, but without creating undue traffic hazard.

Road approaches are to be constructed to a width adequate for their use, with 20-foot radius curves at the turnout from the highway. Side slopes shall be such as would be used on regular highway cut or fill slopes.

Road approaches are to be improved to a condition at least equal to their condition prior to the construction.

### Article 35—Change in Grade on City Streets

When data is submitted for changes in grades along city streets which must be ratified by ordinance passed by the city councils, grades to be established shall be shown at all grade breaks and at all intersections of center lines and gutters of all cross streets and alleys.

If the city has datum other than "U. S. 1929" datum as shown in Special Publication No. 177, grades shall be shown in both data or the equation plainly marked on all profiles and maps submitted for that purpose.

### Article 36—Mile Posts

Position of mile posts must show on all maps and profiles.

### Article 37—General Instructions for Surveys

(a) No revision of an existing highway alignment should be attempted without having the latest map of the alignment, which can be obtained from the Construction Engineer at Salem.

(b) At the point where a line revision leaves the existing highway, the original stationing and bearing shall be used and carried forward; an equation with the original stationing and bearing being given at the end of the revision. On major revisions, an equation in bearings should be made at both the beginning and end of the revision.

(c) The survey for a revision should be a complete survey in itself and no dependence placed on the topography and property lines shown on old location maps.

(d) The accurate location of section corners and property lines is very important. The actual field ties to section corners and property lines shall be shown on the 100-foot location map.

(e) The ties to lot and block corners and property lines should preferably be shown by angles rather than bearings as sometimes the bearings are changed along the center line and the bearings of other lines on the map are overlooked. If angles are used, the bearings along the center line may be changed without affecting the relative position of any point or line which may be tied to the center line.

(f) Where the location runs adjacent to a railroad, frequent ties should be made between the center lines of the highway and railroad, which will enable the exact relationship of the two lines to be determined. All field ties are to be shown on the map.

(g) All question as to the exact location of the center line should be settled before any right of way descriptions are wirtten.

(h) The 100-foot scale location map is primarily a right of way map and all information necessary for the writing and checking of right of way descriptions, encroachments, etc., should appear on this one map. The map should be as continuous as possible. Sending in separate maps for disconnected pieces of right of way will not be countenanced. All right of way descriptions are checked in the Salem office prior to the preparation of deeds and this checking cannot be done intelligently from small, disconnected fragments of the map.

(i) When the map is completed, it should be forwarded to the Salem office, where a tracing will be prepared from which additional copies may be made. The original will then be returned (with additional copies, if desired). When the right of way descriptions are sent in to the Salem office, they are there checked with the same information from which they were prepared.

(j) When any alterations are made on the original map, the necessary data should be forwarded to the Construction Engineer, Salem, so that the tracing may be corrected.

### Article 38—Location Cross-sections

Cross-sections shall be taken at all breaks in the ground surface and shall be of such width each side of center line as to definitely extend beyond the limits of the slope lines of the contemplated construction.

An interval of not to exceed 100 feet between sections may be used in flat country and 50 feet in rolling country. All readings shall be taken

as plus and minus from the ground elevation at center line. For form of notes see Sec. 7.

Generally, a scale of 10 feet to the inch shall be used in platting cross-sections for grading jobs. On revisions, etc., in cities a scale of 5 feet to the inch may be used.

Location cross-sections shall be platted on rolls of 10 x 10 cross-section paper.

### Article 39—Earthwork Computation Sheets

Earthwork computation sheets, Form E-103 shall be used as a record and summary for the roadbed quantities and such other quantities as are included in the haul computations. The roadbed areas shall be noted directly on these sheets and the volumes computed therefrom. Other miscellaneous excavation which enters into the haul computations should be inserted at their proper places in the volume column with abbreviated identification.

The estimated shrinkage or swell factor to be used in the mass computations shall be approved by the Division Engineer. This factor shall be applied to embankment quantities except in the exceptional cases where the pay unit is for embankment measured in place. In such cases the factor will be applied to the excavation quantities.

The sheets shall be numbered and bound in booklet form.

### Article 40—Location Mass Diagram

A mass diagram shall be platted on 10 x 10 cross-section paper using a 100-foot to the inch horizontal scale and a vertical scale such as will represent the mass of material to the best advantage. By breaking the diagram at the haul points, the vertical scale may be varied as desired.

Haul lines representing the limits of the designated hauls (free haul, short overhaul, long overhaul, etc.) shall be platted on the diagram and the limits scaled. The areas may be planimetered. If the areas are computed, the haul limits shall be scaled to the nearest foot.

### Article 41—Profile

See Section 11, Article 12.

### Article 42—Grade Lines

The grade line should be laid and balanced for a flat roadbed section of the width specified for the particular survey at hand. (See Sec. 11-11 for grade on structures.) The grade line established shall be for sub-grade and shall be so noted on all profiles.

### Article 43—Comparison of Lines

When there are two or more lines to choose from, as is usually the case, the various physical quantities and the total cost shall be tabulated and summarized under appropriate headings on one sheet for all lines considered, so that the advantages or disadvantages of one line as compared with those of another may be seen at the same time.

### Article 44—Projected Lines

When a suitable projection of a location has been made, an estimate of all the physical quantities involved on such line shall be made up in detail. In general these will include:

(a) Length in miles.
(b) Total rise and fall in feet.
(c) Maximum grade and total length of maximum grade.
(d) Total curvature and maximum curve.
(e) Number of maximum curves.
(f) Right of way in acreage.
(g) The various grading quantities.
(h) Total length of culverts of each size.
(i) Total length of trestles.
(j) Each large bridge as a unit.
(k) Masonry work, etc.
(l) Total cost.

In short, all quantities that can be ascertained and estimated, which will enter into the construction cost should be shown.

### Article 45—Location Survey Records to be Submitted

On completion of a location survey the following records will be submitted to the Division Engineer for approval and forwarding to the Salem office.

Two copies of form "Locating Engineers Statement."

Detail map on hard paper, scale 100-foot to the inch for country or 50-foot to the inch for city and congested areas. The map will show all preliminary, located or projected lines, contours, streams, section lines, sub-division and property lines, buildings, roads, streets, railroads, telegraph, telephone and power lines, water, gas or electric conduits, sewers, vegetation, monuments, and any other pertinent details.

Profile, scale 100-foot horizontal and 10-foot vertical, on tracing cloth.

Detail map on hard paper, scale 400 feet to the inch. (When requested by the Construction Engineer. See Sec. 11-7.)

Cross-sections of located line on hard copy cross-section paper, scale 10 feet to the inch, ground inked and roadbed in pencil.

Mass diagram, pencil on hard copy profile paper.

Vicinity maps and profiles traced on cloth federal aid sheets, standard scale 50 feet to the inch. These are to be made for all retaining walls and for all stream, railroad and other crossings requiring structures larger than pipe culverts.

Vicinity maps on cloth of all new railroad crossings, scale 200 feet to the inch, to conform to P. U. C. standards.

Co-ordinate sheets, computation sheets, transit, level and cross-section notes.

Right of way descriptions for all property required on the location.

Report describing the survey, with comparison of lines run and estimates of costs.

This report is to be accompanied by a letter size sketch map showing the location of and giving a description of all buildings within the proposed right of way.

The body of the report shall cover in complete detail the conditions that make it necessary to hit such buildings.

Such other special maps and records as may be necessary or ordered by the Division Engineer.

Titles shall be placed on all records giving the name of the section and highway, the county, date and name of the locating engineer. On roll maps, profiles, etc., a sub-title shall be placed on the outside of each end of the roll. The main title will be on the inside of the left end of the roll. (See Section 11, Article 1.)

### Article 46—Classification on Surveys

Where excavated material is classified on surveys otherwise than on a percentage basis, as by zones or sections, it must be clearly indicated on all sections to which it applies.

Form E-39—8M—12-40

OREGON STATE HIGHWAY COMMISSION

## AUTHORITY FOR SURVEY

Section *Madras-Terrebonne* Date *Janurary 6*, 19*38*

Highway *The Dalles-California* Authorization No. *1*

County *Jefferson* Survey Prefix ............ (Assigned by Salem office)

Description of termini, route, length, etc.:

*The north end of the proposed survey is the intersection of 5th. and Oak streets in Madras, which is also the junction of the Warm Springs and The Dalles-California Highways.*

*The south end will connect with the Dalles-California Highway at the south city limits of Terrebonne.*

*Length - 21 miles.*

Purpose of survey:

*Make location, prepare plans, estimate of cost and right of way descriptions for proposed reconstruction.*

Estimate of cost:

*21 miles at $600.00 per mile - $12,600.00*

INSTRUCTIONS

Submit three copies to Salem. After approval by the State Highway Engineer, one copy will be sent to the Division Engineer and one copy to the Resident Engineer.

This form does not constitute authority for making survey until approved and returned.

Submit separate order for each survey.

Total estimated cost of survey . . . . . $*12,600.00*

Previous authorization . . . . . . . .

Additional authorization requested . . . .

Additional authorization approved (Salem) . .

Total all authorizations approved (Salem) . .

Request made by:

*(s) J. M. Smith* Field Engineer

Recommended for Approval:

*(s) B.B. Black* Division Engineer

Recommended for Approval:

............ Construction Engineer

Approved:

............ State Highway Engineer

STATE PRINTING DEPT.

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Form E-103—5M—11-40

OREGON STATE HIGHWAY DEPARTMENT
Salem, Oregon

## EARTH WORK COMPUTATION SHEET

Section *Bear Creek-Deer Creek* Line *Const.* Sheet No. *6*

Highway *Pacific* County *Douglas* Job No. *13-1082*

STATE PRINTING DEPT.

| Station Numbers | Areas: Cut | Areas: Fill | Volumes: Excavation | Excavation Subtotals | Volumes: Embankment | Embankment Subtotals | Mass Computation: Emb. + or − % | Mass Computation: Summation | Classification: Basis | Quantities: Common | Quantities: Inter. | Quantities: Rock |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1.00377181 | | | | | |
| 141 | 733.23 | | | | | | | +17,443.5 | | | | |
| | | | 1131.5 | | | | | | | | | |
| +50 | 488.75 | | | | | | | +18,575.0 | | | | |
| | | | 698.6 | | | | | | | | | |
| 142 | 265.71 | | | | | | | +19,273.6 | | | | |
| | | | 524.3 | | | | | | | | | |
| +50 | 300.55 | | | | | | | +19,797.9 | | | | |
| | | | 465.2 | | | | | | | | | |
| 143 | 201.85 | | | | | | | +20,263.1 | | | | |
| | | | 340.1 | | | | | | | | | |
| +50 | 165.50 | .00 | | | | | | +20,603.2 | | | | |
| +75 | Pyr. 00 | Pyr. | 51.1 | 9184.0 | 1281.8 | | 1286.6 | | | | | |
| 144 | | 2076.54 | | | | | | +19,367.7 | | | | |
| | | | | | 5406.9 | | 5427.3 | | | | | |
| +50 | | 3762.87 | | | | | | +13,940.4 | | | | |
| (+67.3) | | | | | 2460.7 / 7105.4 / 4644.7 | 9144.4 | 7132.2 | (+11,470.3) | | | | |
| 145 | | 3911.00 | | | | | | +6,808.2 | | | | |
| (+47.2) | | | | | 6782.4 / 7188.7 / 406.3 | 11,427.1 | 7215.9 | (00) | | | | |
| +50 | | 3852.84 | | | | | | -407.7 | | | | |
| | | | | | 7103.2 | | 7130.0 | | | | | |
| 146 | | 3818.63 | | | | | | -7,537.7 | | | | |
| | | | | | 4329.5 | | 4345.9 | | | | | |
| +30 | | 3974.43 | | | | | | -11,883.6 | | | | |
| | | | | | 2385.1 | | 2394.1 | | | | | |
| +50 | | 2465.25 | | | | | | -14,277.7 | | | | |
| (+84.2) | | | | | 1878.1 / 2742.3 / 864.2 | 16102.2 | 2752.7 | (-16,163.0) | | | | |
| 147 | | 496.43 | | | | | | -17,030.4 | | | | |
| | | Wdg. | | | 229.8 | 1094.0 | 230.7 | | | | | |
| +25 | 00 | 00 | | | | | | -17,261.1 | | | | |
| | Wdg. | | 45.0 | | | | | | | | | |
| +50 | 97.22 | | | | | | | -17,216.1 | | | | |
| | | | 3255.8 | | 37,772.7 | | 37,915.4 | | | | | |

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LOCATING ENGINEER'S STATEMENT
Submit 2 copies with Estimate

Prefix 18-1466 Highway The Dalles- Calif.

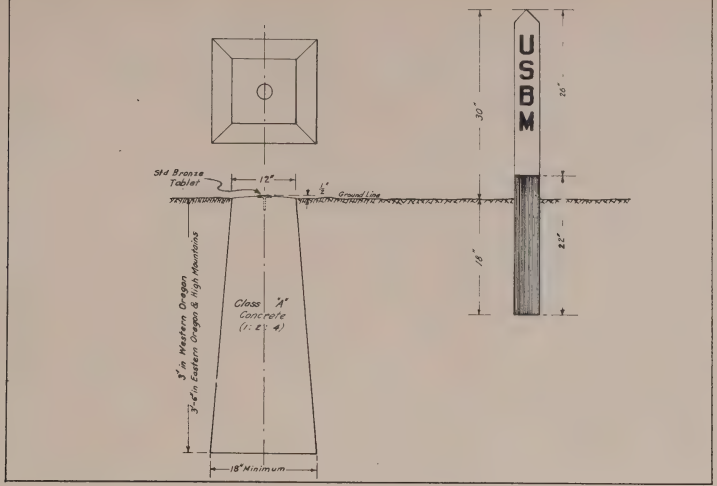
Date 12/6/44 Section Chemult-Lobert Class Roadbed 150 M

1. Have you prepared and submitted the following report:
   - (a) Locating Engineer's R/W Report yes
   - (b) Report on Survey yes
   - (c) Statement of source of materials and Stockpile sites no
   - (d) Property and R/W descriptions yes
   - (e) Statement of Information [redacted]
   - (f) Request for authority to open negotiations yes
   - (g) Sketch map (tracing cloth) of all stockpile sites, gravel pits, quarries. no
   - (h) Report of Bench Marks (See Circular Letter No. 192). no
2. Have you taken into consideration the mechanics and properties of the various types of soil encountered in designing the disposal of excavated materials, and the stability of embankment foundations? yes
3. Have all important alignment points been permanently referenced only along old hwy.
4. Have you consulted the Division Engineer with regard to retainment and abandonment of each fragmentary section of old Right of Way? yes
5. Do you anticipate any difficulty in securing rights of way no , Material Sources no and stockpile site no ? Have you been over any of this project with R/W Rep? no. Report any knowledge you have regarding R/W negotiations? none to report
6. Are there any fences or mail box posts to be moved? If so, report in full, by station to station. no
7. Have you investigated drift conditions (snow and sand) and provided extra right of way and included drift fences in your estimate to take care of these conditions? yes
8. Have you submitted samples of the surfacing materials for test by the Salem Lab. for suitability? yes
9. Have you submitted a sample of the overburden to determine its classification for each material source specified? no
10. Will there be any difficulty in handling traffic during construction? If so, state control of work recommended, location of and maintenance of detours, public convenience and safety. no
11. Have you platted typical cross-section on the location profile of the following and indicated source of materials where needed.
    1. Roadbed grading yes
    2. Retaining walls none
    3. Irrigation Ditches none Special Drainage Ditches yes .
    4. Hand Placed Slopes none
    5. Rip Rap. Work none
    6. Tunnel (Drainage) none
    7. Channel Changes none
    8. Channel clearing and deepening none
    9. Sidewalks, curbs, gutters. none
    10. Flumes yes
12. Is there any slide condition apparent? If so, give location and recommended methods of control. no
13. Have you prepared vicinity maps and bridge construction, survey data sheets for each structure including bridges, concrete box culvert and any major siphon installation? yes
14. On projects involving reconstruction, have you shown, by a dotted line, the original ground line on the profile. yes
15. State standard used, sight distance provided, both horizontal and vertical, in accordence with Circular Letter No. 86 Std. of Dec. 31, 1940 used, all requirements of same conformed with.

Signed (s) J. Doe
Locating Engineer.

Address

## STANDARD CONCRETE MONUMENT & BENCH MARK GUARD POST




REPORT ON BENCH MARK RECOVERIES

Highway Followed John Day Level Line 135

County Grant Date 3/6/45 Eng'r. J Smith

(Report only one level line on a sheet and submit in cuplicate)

| No. | Found | | Condition | | | | Reset | | Marker in Place | | | Description OK | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Yes | No | Good | Dis-turbed | Inac-cessible | Des-troyed | Yes | No | Yes | No | Needed | Yes | No | |
| A 135 | ✓ | | ✓ | | | | | | ✓ | | | ✓ | | |
| B 135 | ✓ | | | | | | | | | | | | | |
| C 135 | ✓ | | | | | ✓ | ✓ | | ✓ | | | | | See attached form E 185 |
| D 135 | ✓ | | ✓ | | | | | | ✓ | | | | ✓ | See attached form # E 186 |
| E 135 | ✓ | | ✓ | | | | | | | ✓ | ✓ | ✓ | | |

Note: This form to be used in reporting bench mark recoveries where existing descriptions are satisfactory. Use the standard "Report on Condition of Bench Mark" cards only when changes in the description are sufficient to warrant their being sent to the Government Bureaus.

Submit both notes and descriptions for all new marks.

Form E 183—1M—3-41

OREGON STATE HIGHWAY COMMISSION

DESCRIPTION OF BENCH MARK

Designation of bench mark V 274 (USHD) State Oregon County Tillamook

Nearest town Tillamook County Tillamook

Distance and direction from nearest town 4.35 south

Detailed description of location

About 4.35 miles south of Tillamook on Oregon Coast Highway, about 100 feet west of entrance to South Prairie School, 40 feet north of highway, 2 feet east of west fence of school yard. Disk stamped "V 274 1940" in concrete post.

Character of the mark Standard U.S.H.D. bronze disk

Established by what organization Oregon State Highway Department

Chief of party Tom B. Slack, Res. Engr. Date Aug. 14, 1944

STATE PRINTING DEPT.

Form E-185—1M—2-41

R

OREGON STATE HIGHWAY COMMISSION

REPORT ON CONDITION OF BENCH MARK

Designation of mark D 135 (U.S.C.&G.S.) State Oregon County Jackson

Nearest town Merryvale Distance and direction from nearest town 14.3 S.W.

Mark searched for or recovered by—(Name) A.B. Ball

Date May 6, 1944 (Occupation) Resident Engineer

(Address) Merryvale, Ore.

Present condition of the mark Good

Letters or numbers found stamped on (not cast in) the mark D 135, 1934

Use the following space for reporting upon the thoroughness of the search in case mark was not recovered, or for suggesting needed changes in the published description, if the mark was recovered

Description OK as given on page 316 in S.P.177 except that distance to Merryvale has been reduced and description should read as follows; "About 14.3 miles southwest of Merryvale on Pacific Hwy, 0.5 mile northeast of summit, 30 feet southeast of road. U.S.C.&G.S. disk in concrete post."

STATE PRINTING DEPT.

(Signed) (s) A.B. Ball

## SECTION 6. CONSTRUCTION SURVEYS

*Article*

1. Retracing Lines.
2. Referencing Lines.
3. Clearing Stakes.
4. Grade and Slope Stakes.
5. Cross Section Reference Readings.
6. Cut and Fill Slopes.
7. Slope Stakes to be Placed Normal to Center Line.
8. Marking Slope Stakes.
9. Superelevated Sections.
10. Finish Grades.
11. Final Grading Cross Sections.
12. Final Grading Cross Section Computations.
13. Measure Large Boulders.
14. Revisions During Construction.
15. Stockpile Cross Sections.
16. Final Construction Mass Diagram.
17. Service Drives.

### Article 1—Retracing Lines

Upon being assigned to a construction project, the Resident Engineer shall immediately retrace the located line, reestablishing portions that have become disturbed or obliterated.

### Article 2—Referencing Lines

Particular attention should then be given to referencing all points necessary. These will include all curve and spiral points, points of intersection of tangents, all points on tangent set in location and enough other points to enable him to reestablish quickly any portion of the line, bearing in mind that construction operations will interfere with the reestablishment of line during construction. He shall see that all reference points are placed where they are not likely to be disturbed during construction. Accurate measurements from the point referenced to the reference hubs should be recorded so that if one reference is destroyed, the point may still be reestablished. If errors are found in the location survey, the work should be checked until the engineer is satisfied that an error exists and its location and amount known. At the point where the discrepancy is found, an equation shall be made and the location stationing carried forward as originally staked. This must be done in order that construction records shall agree as closely as possible to the location survey, as all right of way descriptions are based on the location survey. (See Section 7, "Field Notes" for examples of references.)

### Article 3—Clearing Stakes

After referencing, clearing stakes marking the outside limits of clearing shall be set over the entire project.

### Article 4—Grade and Slope Stakes

As soon as the contractor or his representative appears on the project, the Resident Engineer shall confer with him and ascertain where he expects to start work and the general plan of procedure. The Resident Engineer will then arrange to have construction cross section stakes set and kept well in advance of the grading. However, they should be set only after the clearing has progressed to a point where the stakes will not be disturbed by the clearing operations.

Cross sections will be taken at intervals of not more than fifty feet, except in very uniform country where they may be taken at longer intervals, but not to exceed one hundred feet. They shall be taken at all breaks in the original ground surface at the points on centerline and edge of roadbed where the profile grade intersects the ground surface. At the latter points grade hubs shall be set to the nearest tenth of a foot. Grade hubs shall also be set on cut and fill sections where the ground line intersects the profile grade.

### Article 5—Cross Section Reference Readings

On all steep side hill work or where the engineer may anticipate slides, readings should be taken beyond the slope stakes for a distance at least equal to the depth of cut. The limit of these extended readings should be marked by a stake, giving the station and distance so that they may be used in re-measurement.

These extended readings should be shown on the platted cross sections and re-measurement platted to the full distance taken.

In cuts where normal conditions may be expected, it is good practice to set reference stakes a uniform distance of ten feet back of the cut stakes. Reference stakes should be marked with the cut, in reference to the profile grade, and with the distance from centerline, and should be set with the station marked side facing centerline.

Reference cut stakes provide a ready means of resetting cut stakes that may be destroyed during construction and are valuable as a check when re-measuring excavation quantities.

### Article 6—Cut and Fill Slopes

Refer to Section 10, "Design" for slopes to be used under various conditions.

### Article 7—Slope Stakes to be Placed Normal to Centerline

In heavy work on steep hillsides, special care must be taken that the slope stakes are set at right angles to the centerline. The use of some simple instrument which will insure a correct right angle for the section is urged.

### Article 8—Marking Slope Stakes

Cross section slope stakes shall have the cut or fill and the distance from the centerline marked on the roadway face of the stake thus: $\frac{C3.0}{15.0}$ or $\frac{F3.0}{16.5}$, and these readings will refer to top of a guinea set in front of the slope stake. The station and plus where the section is taken shall be marked on the back of the stake.

Each grade point on centerline, at edge of roadbed or at grade on cut and fill section, shall have a stake placed at the back side of the grade hub and be marked thus: $\frac{00}{12.0}$, the bottom figure being distance out from center, with stationing shown on the back side of the stake. (See Section 7, Article 8.)

### Article 9—Superelevated Sections

Superelevated sections shall be cross-sectioned in the manner indicated in the section "Design Standards" where the raising or lowering from profile grade is indicated.

### Article 10—Finish Grades

For the final grading operation blue-topped grade stakes shall be set on the subgrade at intervals of not more than 50 feet, to provide a means for the contractor to complete grading operations. These shall be set to within two-hundredths of a foot from the grade elevation indicated on the profile.

On paving work grade stakes shall be placed at a distance not to exceed three feet from the edge of the pavement, preferably about one foot. A tack shall be placed in the top of the grade stake to designate line. Marking grade stakes with lines for elevation will not be permitted. Grade stakes shall be driven to the nearest hundredth of a foot. After the forms for the paving are set, they shall be checked to see that they are true to grade; irregularities shall be marked on the side of the forms for correction by the form setting crew. Following the final aligning of the forms, they shall again be checked to see that the corrections have been properly made.

### Article 11—Final Grading Cross Sections

Platted cross sections need not be submitted for grading jobs that involve simple sections where the cross section and remeasure notes have been recorded in the manner set forth in Section 7, Article 8, so that the areas and quantities can be computed directly from the notes.

Where it is necessary to plat the cross sections, they shall be platted upon 10 x 10 cross section paper eleven inches wide, fourteen inches long. The scale shall be ten feet to the inch except in special cases, where the change will be clearly indicated. These pages shall be numbered and bound into a book. Onion skin federal aid size sheets are not to be used for platting final cross sections. Superelevation shall be shown to scale.

Each page shall have a title in addition to the main title on the cover page; the title on the inside pages need only be sufficient to identify any page which might temporarily become displaced during checking operations at the Salem office.

In cases where sub-contractors are doing part of the work, a split must be made in the sections at the occurrence of the work so that the sub-contractor's estimate may be taken out by the contractor.

Trench and structural excavation may be computed directly from the notebook and need not be platted.

### Article 12—Final Cross Section Computations

On final construction records all cross section areas shall be computed to the nearest hundredth of a square foot. Yardage shall be computed by the average end area method to the nearest tenth of a cubic yard, except that where pyramids occur at the end sections of cuts or fills, their yardage shall be computed as pyramids.

Cross section quantities must be computed as rapidly as the cross sectioning progresses from day to day, in order that comparison can be made with the preliminary and location quantities and a check made against the assumed swell or shrinkage factors used in the preliminary estimate.

The quantities shall be carefully checked and rechecked before being accepted as correct. In

case an unusually large difference develops between the location and construction quantities, re-examine both sets of level and cross section notes to find out where and why the difference occurs.

On the more costly material such as concrete, rubble masonry, etc., the prismoidal formula or other accurate methods of computing volumes shall be used.

### Article 13—Measure Large Boulders

Large boulders should be measured and recorded as they lay above the natural ground.

### Article 14—Revisions During Construction

When changes appear advisable in grade or alignment during construction, complete sketches shall be prepared showing the original line and the proposed change. Accompanying the proposed plans shall be a statement showing the original quantities and cost and the revised quantities and cost. This information is to be submitted to the Division Engineer for his approval before the change is made (and if approved by him to be transmitted to Salem headquarters).

### Article 15—Stockpile Cross Sections

Greater care should be exercised in cross sectioning stockpiles than in cross sectioning roadbed quantities on account of the relatively higher cost of this material, attention being given to minor breaks in the ground line and in the lines of the finished pile.

The average end area method of computing volumes is sufficiently accurate and shall be used for the main body of the pile, but for the end sections which flare out to form a wedge and two pyramids, a method giving greater accuracy should be used. A good formula to use for these end sections is $\frac{(W + W_1 + W_2)\,L\,h}{162} =$ Cu. Yds., in which W is the width of the oo section where the end of the pile meets the original ground, $W_1$ and $W_2$ are the top and bottom width respectively of the section at the peak of the wedge and two pyramids, L is the horizontal distance between the oo section and the peak section, and h is the average height of the peak section. h is obtained by dividing the area of the peak section by $\frac{W_1 + W_2}{2}$ and should be carried to the nearest .01 of a foot.

The cross sections should be taken and recorded as shown in the sample notes, Section 7, and the areas and volumes computed directly from the notes. Platted sections are not required and should not be submitted if the notes are so recorded.

### Article 16—Final Construction Mass Diagram

The mass ordinates shall be computed to the tenth of a cubic yard. The haul limits shall be computed to the tenth of a foot. Do not go beyond these limits.

The quantities shall be computed, not planimetered.

The construction mass diagram shall be in ink.

### Article 17—Service Drives

The highway commission recognizes the right of access to existing highways by abutting property owners conditioned upon such access being in conformance with the regulations, design, specifications, and stipulations as set forth herein. Exceptions to the foregoing are as follows:

(a) Where right of access has been transferred to the State.
(b) At those locations wherein sight distance may be impaired or for any reason the service driveway constitutes a traffic hazard.
(c) Where unnecessary damage to roadside trees and landscaping would result.

There are certain basic dimensional controls, specifications, and regulations which must be complied with and which will be found applicable to the majority of conditions encountered. The specific controls are enumerated hereinafter and general reference is directed to the several typical sketches included herewith.

*Dimensions—*

1. The parking of cars on the right of way for service or for the transaction of business in connection with the commercial activities abutting upon the highway shall be prohibited. Gas pumps, roadside stands, and structures of similar nature shall be maintained at a minimum 10-foot setback from right of way line.
2. Single service driveways shall be limited to a maximum 25-foot width measured parallel to the highway center line. In cases where there are "entrance and exit" service drives, the normal width of each shall be 25 feet with the safety island between the two driveways a minimum of 20 feet in length. In the instance of dual ac-

cess drives, additional width thereof, over and above the specified 25 feet, will be permitted in amount equal to one-half the extra island length (over and above the minimum 20 feet) up to a maximum of 30 feet for each driveway.

3. If additional setback is provided over and above the minimum 10 feet, additional width driveways will be permitted equal to one-half of such additional setback but not to exceed a maximum of 30 feet for any one driveway.
4. The 10-foot minimum setback requirement shall not be retroactive or applicable in the instance of existing gas pumps, stands, etc., installed prior to January, 1939. In such cases improvements and alterations will be allowed up to 25 per cent of the present appraised value of the business establishment after which it will be placed in the category of a new structure and the 10-foot setback regulation will apply. If the present structure burns or is otherwise destroyed, any new development shall be governed by the regulations set down herein.
5. In the instance of single driveways, the "curb return" radius shall be confined to 10-foot minimum and 15-foot maximum. In the instance of dual entrance driveways, the inside radius shall be 10-foot minimum and the outside radius variable up to 25 feet maximum.
6. In the instance of single driveways on each of two intersecting streets or highways, the minimum and maximum radii shall be the same as in the case of dual driveways. In the instance of an establishment at or near an intersection, a minimum distance of 30 feet shall be maintained between the intersection of right of way lines and the near edge of any service drive. (Refer sketches 1, 2, and 3.) In no case shall driveway aprons extend around the corner of an intersection nor shall the corner be used at all for a drive area.
7. Wherever possible, service drives shall be so constructed as to allow the motor vehicle to come to a full stop on practically level ground before entering upon the highway. In no case shall the grade of the service drive exceed 20 per cent for the first 20 feet of driveway immediately adjacent to the highway shoulder.

*Drainage—*

1. Culverts shall be installed under the service drive of end area such as will provide adequate drainage. In any case, such culverts shall be a minimum of 12″ diameter pipe. Only standard (tongue and groove joint) concrete or corrugated iron culverts will be permitted. Tile or wood box culverts shall not be permitted. Temporary plank bridges shall be permitted only by special permit and for a limited period.
2. Whenever a bridge or drainage structure other than a culvert pipe is involved, special approval of the Highway Engineer will be required, and a special agreement covering the construction and maintenance of the installation will be drawn up.
3. When long lengths of pipe are installed, catch basins may be required, at the discretion of the Engineer, to collect and carry away surface water.
4. The grade of all driveways shall be such that no water is thrown onto the highway pavement or shoulder. The normal shoulder slope away from the highway pavement shall be maintained for the full width of the shoulder and on the upper side of a super-elevated curve a shallow valley shall be formed at the edge of the shoulder to divert water from the highway pavement.

*Grading and Surfacing—*

1. Rocking or surfacing shall be limited to the area of the service drive proper, and those areas not in the service drive are to be improved by sidewalks, curbs, lawn, or shrubs.
2. For service drives projected through a highway cut, the cut shall be rounded back such as to afford the maximum unimpaired sight distance to the vehicle operator entering upon the highway.

The Engineer will perform the necessary field work in the establishment of grade lines and the general layout of the service drives.

In the instance of service drives in rural areas, the property owner will furnish the culvert in cases where 18″ pipe is adequate. In cases where larger than 18″ pipe is required, the State will furnish the pipe but only on receipt from the owner of an amount equal to the purchase price of the standard 18″ pipe. In cases where catch basins are required, the owner shall furnish the cast iron grate and frame and the State will construct the concrete box.

In cities where curbs are in place, the property owner will pay all costs of the service drive construction. The construction must conform to lines and grades established by the Engineer.

Pipe installation; the driveway embankment; the surfacing of the driveways (on the right of way), and the construction of safety islands will be performed by the State. In the instance of driveways where no pipe is required, the State will place the embankment and surfacing and build the island. Where catch basins are required, the State will construct the concrete box, with the property owner to furnish the cast iron grate and frame as indicated hereinabove.

On all service drive construction involving pedestrian safety islands, landscape developments or extra width driveways, including commercial or service station entrances, the State's cooperation shall be limited to such culvert pipe, embankment, and surfacing as are required for normal width driveways only.

In the instance of large-scale business or commercial developments requiring special treatment and where extra width drives or other special conditions prevail, special approval by the Highway Engineer will be required, and it will be necessary to submit to him a plan of the proposed access facilities. When more elaborate facilities are required, the State will install all culvert pipe, construct all catch basins, and provide such embankment materials only to the extent of that which would be required for normal width service drives and to the extent of the State's cooperation in connection with such normal width drives as set down hereinbefore. Such additional material or work as may be required over and above that necessary for normal width driveways shall be performed at the expense of the property owner.

As regards maintenance, the Highway Department will maintain service drives in rural areas, constructed in compliance with Department regulations, which lie within the highway right of way. In cities, that portion of service drives and any drainage structures incident thereto which lie within the highway right of way will be maintained by the Highway Department except as otherwise provided in agreements covering a particular development.

Service drives constructed by private parties contrary to Highway Department regulations are subject to removal and shall not be replaced or maintained.

The State Highway Commission is not obligated to build driveways and reserves the right to refuse cooperation in instances requiring expensive construction. When cooperation in service driveway construction is estimated at a cost in excess of $75.00, special approval by the Highway Engineer will be required. Whenever a drainage structure other than culvert pipe is involved, special approval by the Highway Engineer will be required.

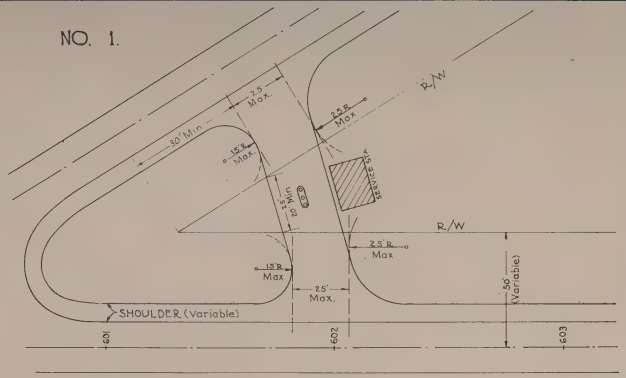
Whenever any new driveway on an existing highway or any modification or extension of an existing driveway is requested, the District Maintenance Superintendent should contact the property owner, ascertain that the State has not purchased access rights, inspect the proposed entrance as to the hazard and cost, and explain the requirements to be met and the conditions of State Highway cooperation to him.

For entrances in cities, and those requiring bridge construction, or commercial or landscape developments, involving extra-width driveways and pedestrian safety islands, a sketch of the proposed development, together with an estimate of cost, should be prepared and submitted for the Engineer's approval.

If the property owner agrees to the terms and conditions imposed, authority to proceed with the State's portion of the work should be requested in the form of a betterment order sent through proper channels to the office of the Maintenance Engineer, unless already provided for in the budget.

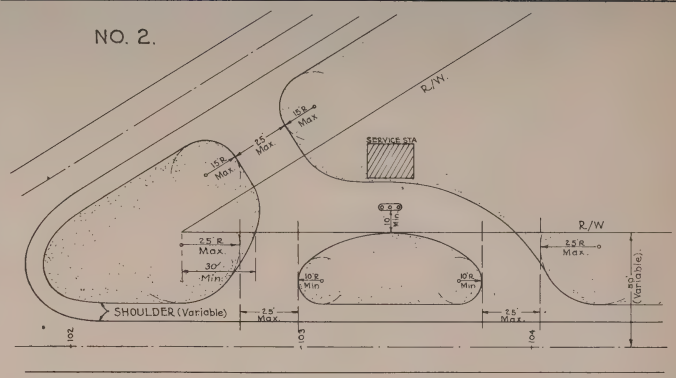
The above procedure has reference solely to installations and modifications on *existing highways*. Wherever *new highways* are built or old highways are relocated, the total cost of entrances, including all necessary culvert pipe or bridges, will be borne by the State as a part of the right of way cost.

NO. 1.



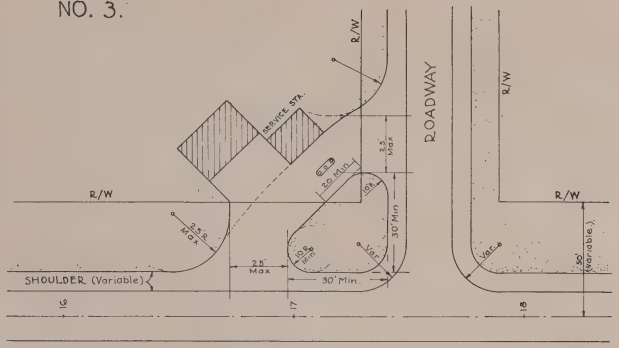

TYPICAL ENTRANCE DRIVE

NO. 2.



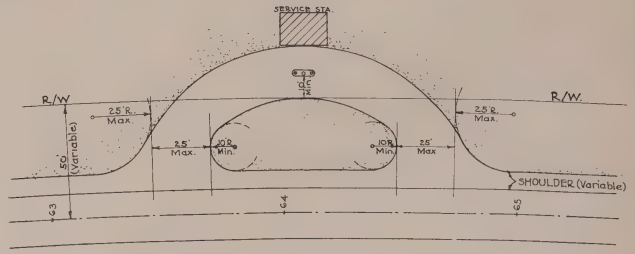

TYPICAL ENTRANCE DRIVE.

NO. 3.




TYPICAL ENTRANCE DRIVE

NO. 4.




TYPICAL ENTRANCE DRIVE

## SECTION 7. FIELD NOTES

*Article*

1. Responsibility for Accuracy of Notes.
2. Index all Notebooks.
3. Keep Separate Notebook for Each Job.
4. All Items to be Accompanied by Notes.
5. General Instructions for Keeping Notes.
6. Notes Covering Monuments and Markers to be Separate.
7. Cross Section Notes; Location.
8. Cross Section Notes; Construction.
9. Sample of Preliminary Line Transit Notes.
Sample of Location Transit Notes.
Sample of Level Notes.
Sample Location Cross Section Notes.
Sample of Construction Cross Section Notes.
Sample Stockpile Cross Section Notes.
Sample Culvert Notes.
Sample Topography Sheet.

### FIELD NOTES

**Article 1—Responsibility for the Accuracy of Notes**

The Resident Engineer shall be held strictly responsible for the care and accuracy of all field notes.

**Article 2—Index all Notebooks**

All notebooks shall have an index in the front of each book.

**Article 3—Keep Separate Notebook for Each Job**

Where a Resident Engineer looks after work covered by two or more contracts, he shall have separate notebooks kept for the work covered by each contract.

**Article 4—All Items to be Accompanied by Notes**

All items appearing on the final estimate shall be supported by notes taken in the field.

**Article 5—General Instructions for Keeping Notes**

Field notes will comprise all preliminary, location, vicinity and construction notes in book form on alignment, levels, topography and cross-sections pertaining to the work. These shall all be turned in to the Division office upon completion of the job. Before doing so, the Resident Engineer shall see that all notes originating under his jurisdiction are properly prepared and indexed. They must be so arranged and titled that they can be readily identified and distinguished from the preliminary or subsequent location and construction notes. Each book shall be titled showing the name of department, highway, county, section or job, and name of Resident Engineer, and also the year and dates of the survey.

Be sure that all pages of notes are numbered consecutively. This is especially important where the loose-leaf type is used. Also be sure that the names of the party making the survey are shown along with their respective positions on the party.

Before the notes are turned in the Resident Engineer shall prepare a complete list or index in duplicate of all records and notes. When checked, he should retain the duplicate and turn in the original with all records to the Division Engineer's office.

The date and state of weather shall be entered on the pages used in keeping notes each day.

Care must be taken that the notes are neat, clear and above all accurate.

No notes of any kind shall ever be erased or destroyed. If it so happens that any notes taken are to be voided, they are to be crossed out by drawing diagonal lines across the page and writing "void" across it in such a manner that the notes will still be legible.

**Article 6—Notes Covering Monuments and Markers to be Separate**

Notes covering any moving, re-setting or referencing of monuments must be sent to the Salem office through the Division Engineer, accompanied by a letter of explanation. Notes covering monuments must not be incorporated in the regular project notes. Descriptions should be full. Approximate true directions should be used and not such expressions as "left of station" or "right of station." Important landmarks should be mentioned. Level notes need only show the turns and the bench mark information. (See Sec. 5, Art. 30.)

**Article 7—Cross-section Notes; Location**

Form E-34 (level sheets) shall be used in recording cross-section notes for location surveys. Actual readings shall be entered and not angle of slope.

**Article 8—Cross-section Notes; Construction**

All cross-section readings shall be taken plus ( + ) or minus ( — ) from profile grade, the + or — sign preceding the reading in the notes. Elevations shall not be used. The cut (C) or fill (F) reading marked on the slope stakes (see Sec. 6, Art. 8) is the distance above or below the base of the slope (the edge of the

roadbed, bottom of ditch, etc.) and the notes for this reading should show the plus ( + ) or minus ( — ) reading from profile grade and in parenthesis above, the cut (C) or fill (F) reading from the base of the slope.

The original ground notes shall be noted on every fourth space in the cross section notes and immediately underneath these original ground notes shall be placed the original design notes, i. e., the notes which designate the width of roadbed, the superelevation, side ditches, etc., to which the section is to be graded. If other remeaseure notes are necessary, as in rock cuts, slide sections, etc., they shall also be placed immediately underneath the original ground notes on the line with the original design notes. If it is necessary or desirable to take slope measurements in remeasuring, record these on a separate sheet and transfer the plus or minus vertical and horizontal distances as computed to the original cross section sheets.

After the profile grade has been established and the original ground sections taken, do not change this grade elevation or these ground notes to take care of minor grade changes. Make corrections in the original design notes to show the alteration in the grade.

If interpolated sections are necessary at stations where no original ground line was taken, do not try to sandwich these notes in between the original ground sections taken previously but put them on separate sheets with notations in the original ground notes as "see sheet — for interpolated sections".

Do not wait until sections are platted to compute the neat section areas and volumes. Compute the areas from the notes immediately after the original ground cross sections are taken and note them on the computation sheets. As soon as the volumes are computed, comparison should be made with the preliminary estimate and the monthly estimates based upon the final measurements.

Cross sections for stockpiled material, borrow pits, etc., should be taken and recorded in a similar manner—plus or minus from a well-established datum point or line. When so taken, the areas and volumes can be computed directly from the notes and the sections need not be platted. (See Sec. 6, Art 11.)

Superelevation figures to be used in cross sectioning shall be secured from the "Roadbed Design Standards" which are included in this book under the heading of "Design".

# SAMPLE TRANSIT NOTES - "P" LINE

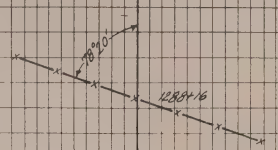
(28) "P" LINE DATE 4/25/45 PARTY Tompkins - ℄ Olsen - K.C. Collins - Ch. Kelly - Stakes Ladd - Axe.

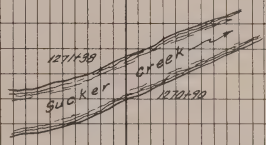
PROJECT Pacific Hwy. Bear Creek - Deer Creek

Form 58-A—10M—1-37

Cloudy TRANSIT SHEETS (26)

| Sta. | Dist. | ℄ Lt | ℄ Rt | Calc. Course | Mag Bearing |
|---|---|---|---|---|---|
| | | | | S41°49'W | S41°52'W |
| | | | (2) 187°19' | | |
| Δ 1290+24.58 | | | (1) 15°36' | | |
| | | | 15°36'05" | | |
| | 449.33 | | | S26°12'55"W | S26°09'W |
| | | (2) 18°00' | | | |
| Δ 1285+75.25 | | (1) 1°30' | | | |
| | | 1°30'00" | | | |
| | 500.00 | | | S27°42'55"W | S27°51'W |
| | | | (2) 36°00' | | |
| Δ 1280+75.25 | | | (1) 3°00' | | |
| | | | 3°00'00" | | |
| | 462.14 | | | | |
| ○ 1276+13.11 | | | | S24°42'55"W | S24°40'W |
| | 597.91 | | | | |
| | | | | | |
| | | | (2) 97°23' | | |
| Δ 1270+15.20 | | | (1) 8°07' | | |
| | | | 8°06'55" | | |
| | | | | S16°36'W | S16°45'W |




# SAMPLE TRANSIT NOTES - "L" LINE

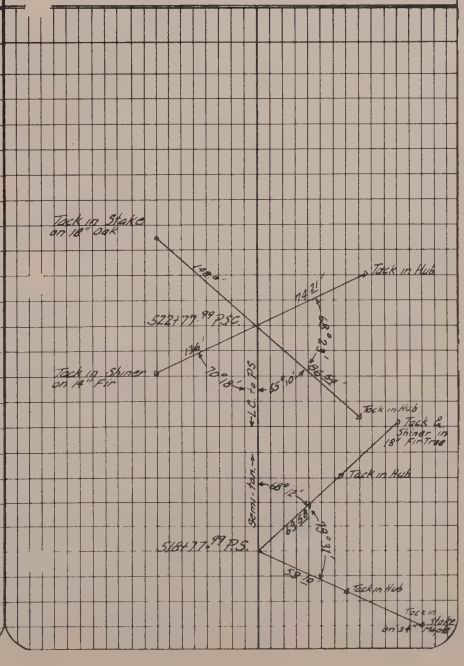
(12) "L" LINE DATE 3/7/45 PARTY Lamb - ℄ Coker - K.C. Brill - Ch. Waltz - Stakes

PROJECT Cascade Locks - Vierra

Form 58-A—10M—1-37

Rain TRANSIT SHEETS (12)

| Sta. | | Def'n. | | Curve Data |
|---|---|---|---|---|
| | | | | |
| 527 | | 4°13' | | |
| +50 | | 3°43' | | 2°00' CL |
| 526 | | 3°13' | | TA 22°34' |
| +50 | | 2°43' | | Ts 772.01 |
| 525 | | 2°13' | | R 2864.79 |
| +50 | | 1°43' | | LMC 728.33 |
| 524 | | 1°13' | | |
| +50 | | 0°43' | | Ls = 400 |
| 523 | | 0°13' | | S = 4°00' |
| | | 0°00' | | |
| 522+77.99 | P.S.C. | 1°20' | 0°00' | a = 0.5 |
| +50 | | 1°09' | 0°16' | X = 9.30 |
| 522 | | 0°52' | 0°44' | p = 2.33 |
| +50 | | 0°37' | 1°09' | q = 199.97 |
| 521 | | 0°25' | 1°31' | Y = 399.81 |
| +50 | | 0°15' | 1°51' | |
| 520 | | 0°07' | 2°08' | |
| +50 | | 0°03' | 2°23' | |
| 519 | | 0°004' | 2°35' | |
| 518+77.99 | P.S. | 0°00' | 2°40' | |



# SAMPLE X-SEC. NOTES- LOCATION

⑦ Loc. ..... Line Date 4-18-45 ..... Party Grey, Brunk, Finch

Project Cascade Locks - Vienta

Form E-34 20M-3-44

Rain

LEVEL SHEETS ⑦

| X-Sec. | Notes | Left | | | ℄ Elev. | Right | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 255 | -1.3 / 100 | -0.4 / 62 | -1.5 / 53 | +7.0 / 40 | +7.4 / 17.0 | 97.2 | +4.7 / 50 | +7.6 / 74 | +12.2 / 100 | |
| +73 | -2.4 / 75 | -1.4 / 45 | +5.4 / 41 | +5.9 / 10 | | 99.2 | 0.0 / 26 | +3.0 / 39 | +6.8 / 89 | |
| 254 | -8.3 / 97 | -7.8 / 47 | -9.2 / 44 | -9.8 / 29 | -0.7 / 23 | 105.2 | -1.9 / 10 | -5.3 / 76 | -4.2 / 49 | -3.4 / 50 | -0.5 / 81 |
| +50 | -6.3 / 93 | -6.2 / 43 | -8.7 / 37 | -8.7 / 31 | -0.7 / 19 | 105.4 | +0.1 / 7 | -4.5 / 11 | -3.0 / 61 | -2.2 / 84 | +2.5 / 95 |
| 253 | -5.2 / 100 | -4.9 / 50 | -8.7 / 38 | -0.5 / 25 | | 106.1 | -3.9 / 6 | -3.8 / 34 | -2.8 / 36 | -1.3 / 68 | +1.3 / 87 |

# SAMPLE TOPOGRAPHY SHEET

# SAMPLE LEVEL NOTES

(8) Const. Line Date 4-18-45 Party Shanks - ⊼ White - Rod
Pacific Hwy.
Project Bear Creek - Deer Creek
Form E-34—20M—3-44

| | + | H.I. | − | Elev. | |
|---|---|---|---|---|---|
| B.M. | 5.643 | 531.842 | | | 526.199 |
| T.P. | 4.326 | 531.443 | 4.725 | 527.117 | ↑ |
| T.P. | 3.541 | 528.006 | 6.978 | 524.465 | |
| T.P. | 4.026 | 526.347 | 5.685 | 522.321 | Approx. ½ Mile |
| T.P. | 3.784 | 524.008 | 6.123 | 520.224 | |
| T.P. | 2.561 | 519.326 | 7.243 | 516.765 | ↓ |
| B.M. | 1.453 | 514.085 | 6.694 | | 512.632 |
| 267 | | | 4.2 | 9.9 | |
| +10 | | | 7.3 | 6.8 | |
| +40 | | | 3.7 | 10.4 | |
| +75 | | | 4.6 | 9.5 | |
| 268 | | | 5.3 | 8.8 | |
| +50 | | | 5.8 | 8.3 | |
| 269 | | | 6.2 | 7.9 | |
| T.P. | 6.297 | 512.071 | 8.311 | 505.774 | |
| +50 | | | 7.7 | 4.4 | |
| 270 | | | 8.8 | 3.3 | |
| +50 | | | 9.6 | 2.5 | |
| 271 | | | 10.2 | 1.9 | |
| +50 | | | 10.7 | 1.4 | |
| B.M. | | | 11.684 | | 500.387 |

Clear LEVEL SHEETS (8)

B.M. - Std. O.S.H.D. disk set in West end of North sidewalk of conc. bridge over Shiner Creek, 4 miles North of N. city limits of Altville on Pacific Hwy. (disk stamped 1X43 - 1936 - 526 feet) Elev. 526.199

B.M. - U.S.C.&G.S. disk set in conc. monument 4.5 miles N. of Altville on Pacific Hwy. 50 ft. N. and 35' E. of N.E. corner of 8'x8' conc. box culvert (disk stamped U.S.C.&G.S. "Y142" - 1934") Elev. 512.636 feet

B.M. O.S.H.D. "Z 142" (description on page 9)

# SAMPLE CULVERT NOTES

(9) Const. Line Date 4/18/45 Party Lamb, Coker, Brill, Wolfe
Project Cascade Locks - Vienta
Inlet and Outlet Ditches
Culvert Station 901+82

| STA. | GROUND | GRADE | CROSS-SECTIONS | AREA | VOLUME |
|---|---|---|---|---|---|
| | | | Inlet Ditch | | |
| End Pipe 0+00 | 2643.7 | 2642.5 | 0/1.0 +1.3/3.6 +1.2/0 +1.2/3.4 0/1.0 | 5.45 | |
| | | | | | 1.8 |
| 0+10 | 44.1 | 43.0 | 0/1.0 +1.2/3.4 +1.1/0 +0.8/2.6 0/1.0 | 4.30 | |
| | | | | | 0.8 |
| 0+20 | 45.2 | 45.2 | 00/1.0 00/0 00/1.0 | 00 | |
| | | | Outlet Ditch | | |
| End Pipe 0+00 | 42.8 | 42.0 | 0/1.0 +0.8/2.6 +0.8/0 +0.8/2.6 0/1.0 | 2.88 | |
| | | | | | 1.4 |
| 0+27 | 40.8 | 40.8 | 00/1.0 00/0 00/1.0 | 00 | |
| | | | Trench Exc. = | | 4.0 c.y. |

Form E-247—10M—12-43 Clear (9)

OREGON STATE HIGHWAY COMMISSION

CULVERT DATA

STATION 901+82

Install ✓ or Salvage

Size 24" Length 86' Class Std. Str. C.M.P.

Skew Sta.: Lt. 901+75 Rt. 901+88

In Place: Ft. Lt. — Ft. Rt. —

Extend: Ft. Lt. — Ft. Rt. —

Pipe Used: New 72' Salvaged 14'

Elevation: Lt. 2642.5 Rt. 2642.0

Min. Cover 3.4' Total Fall 0.5'

Culvert Exc. 3.5 Ft. Wide-Sides Vertical

00/40.0 +1.2/40.0 +0.6/0 +1.0/25.0 +0.8/46.0 00/46.0 =

$\frac{149.80 \times 3.5}{54}$ = 9.7 cu. Yd. Struc. Exc.

# SAMPLE X-SEC. NOTES-CONS'T.

(13) Const. Line Date 3/16/45 Party Staub, Anderson, Benson

Pacific Hwy

Project Bear Creek - Deer Creek

Rain (13)

OREGON STATE HIGHWAY COMMISSION

CONSTRUCTION CROSS SECTION NOTES

Form E 32—5M—10-43

| STATION | Ground Elev. | Grade Elev. | CROSS SECTION Left | READINGS C | READINGS Right | Remarks or Sketches |
|---|---|---|---|---|---|---|
| | | | (F9.2) | | (F8.6) | |
| 244+50 | 617.7 | 623.5 | -8.0 / 38.4 -8.0 / 20.0 | -5.8 | -4.0 / 5.0 -5.0 / 20.0 -9.0 / 37.2 | |
| | | | Rem. Neat Sec. +1.2 / 20.0 | | 0.0 / 10.0 -0.4 / 20.0 | |
| +32 | | | | | 00 Ditch | Profile Grade carried 10' Rt. Super. 0.4 per ft. |
| | | | (F4.2) | | (0.0) (0.0) | |
| 244 | 621.3 | 623.3 | -3.0 / 26.8 -3.8 / 16.0 | -2.0 | -0.4 / 20.0 -0.4 / 36.0 | |
| | | | Rem. N.S. +1.2 / 20.0 | | 0.0 / 10.0 -2.4 / 28.0 | |
| | | | Ref. (0.0) | | (C2.6) | Ref. |
| +50 | 627.5 | 623.1 | +0.7 / 30.0 +1.2 / 20.0 +5.0 / 10.0 | +4.2 | +3.0 / 8.0 +5.3 / 23.0 +2.2 / 46.4 | +2.8 / 56.4 |
| | | | Rem. +1.2 / 20.0 | | 0.0 / 10.0 -0.4 / 20.0 -2.4 / 28.0 -2.0 / 37.0 | |
| | | | Ref. (C3.8) | | (C6.6) | Ref. |
| 243 | 628.4 | 622.9 | +4.0 / 47.2 +5.0 / 37.2 +9.5 / 28.0 | +5.5 | +5.0 / 6.0 +9.0 / 27.0 +6.2 / 45.2 | +7.6 / 55.2 Grade raised |
| | | | Rem. +4.8 / 39.0 -1.2 / 29.0 -~~0.8~~ / ~~20.0~~ +1.0 / 20.0 | | +0.2 / 10.0 -0.2 / 20.0 -2.2 / 28.0 +6.0 / 43.8 | 0.2 feet |

# SAMPLE X-SEC. NOTES-STOCKPILE

Const. Line Date Rain 3/5/45 Party Brown, White, Black

(3)

Project Bear Creek - Deer Creek

Form E-34—20M—3-44 Orig. Ground Sections

Orig. Ground H.I. = 10.00 - 4.00 | 6.00 Ref. B.M.

3/4"-0" Stockpile - Sta. 298+54

| | | | | | | |
|---|---|---|---|---|---|---|
| 0+00 | 1.9 / 0 | 1.9 / 12 | 1.9 / 30 | 2.3 / 49 | 2.3 / 67 | 2.3 / 79 |
| 0+12 | 1.8 / 0 | 1.8 / 12 | 1.9 / 30 | 2.0 / 49 | 2.1 / 67 | 2.2 / 79 |
| 0+31 | 6.8 / ~~1.8~~ / 0 | 6.7 / ~~1.7~~ / 12 | 6.8 / ~~1.8~~ / 30 | 6.8 / ~~1.8~~ / 49 | 6.7 / ~~1.7~~ / 67 | ~~1.7~~ / ~~79~~ |
| Rem. | 6.8 / 0 | 0.8 / 12 | 0.7 / 35 | 0.7 / 58 | O.G. 6.7 / 70 | |
| 0+50 | ~~1.6~~ / ~~0~~ | 6.8 / ~~1.8~~ / 12 | 6.8 / ~~1.8~~ / 30 | 6.6 / ~~1.6~~ / 49 | 6.7 / ~~1.7~~ / 67 | ~~1.8~~ / ~~79~~ |
| Rem. | O.G. 6.6 / 1 | 0.5 / 11 | 0.6 / 35 | 0.5 / 59 | 6.7 / 72 | |
| 0+69 | ~~1.6~~ / ~~0~~ | 6.6 / ~~1.6~~ / 12 | 6.5 / ~~1.5~~ / 30 | 6.3 / ~~1.3~~ / 49 | 6.4 / ~~1.4~~ / 67 | ~~1.4~~ / ~~79~~ |
| Rem. | 6.6 / 1 | 0.5 / 10 | 0.5 / 35 | 0.6 / 62 | 6.4 / 72 | |
| 0+88 | 1.7 / 0 | 1.5 / 12 | 1.4 / 30 | 1.4 / 49 | 1.4 / 67 | 1.4 / 79 |

Remeasure - 3/4"-0" Stockpile - Sta. 298+54 (3)

Date - 4/7/45 Clear

LEVEL SHEETS

Party - Brown, White, Black

| B.M. 6.00 | +9.00 | Rem. H.I. 15.00 | | Area | Cu. Yds. |
|---|---|---|---|---|---|
| 0+10 | 00 Sec. 6.8 / 0 | Wedge & 2 Pyr. | 6.9 / 72 | | |
| | | | | | 86.6 |
| 0+22 O.G. Interp. | (6.8 / 0 6.7 / 12 | 6.8 / 30 6.9 / 49 | 6.9 / 58 6.9 / 70) | | |
| 0+22 | 6.8 / 0 0.7 / 12 | 0.6 / 35 0.5 / 58 | 6.9 / 70 | 360.55 | |
| | | | | | 118.4 |
| 0+31 | See Orig. Ground | | | 349.95 | |
| | | | | | 252.6 |
| 0+50 | See O.G. | | | 367.90 | |
| | | | | | 257.6 |
| 0+69 | See O.G. | | | 364.10 | |
| | | | | | 161.5 |
| O.G. Interp. | (6.7 / 0 6.5 / 10 | 6.4 / 30 6.4 / 62 | 6.4 / 72) | | |
| 0+81 | 6.7 / 0 0.5 / 10 | 0.6 / 35 0.6 / 62 | 6.4 / 72 | 362.85 | |
| | | | | | 99.1 |
| 0+95 | 00 Sec. 6.7 / 0 | Wedge & 2 Pyr. | 6.8 / 72 | | |

## SECTION 8. CULVERTS AND DRAINAGE

*Article*

1. Design of Waterway Areas for Bridges and Culverts.
2. Box Culverts.
3. Grade or Slope Average Stream Bed to be Shown.
4. Drainage Area to be Determined and Shown on Maps and Profiles.
5. Kind and Type of Culvert Pipe to be Used.
6. Inlet and Outlet Ditches.
7. Side Ditches.
8. Side Drains.
9. Culverts at New Road Approaches.
10. Surface Ditches.
11. Special Drainage.
12. Culverts to be Located at Right Angles to Center-line.
13. Headwall or Wingwalls to Culverts.
14. Culvert Location May be Altered After Clearing Site.
15. Additional Culvert Expense to be Approved.
16. Inspection of Corrugated Metal Pipe.
17. Inspection of Concrete Pipe.
18. Procedure for Installing Culverts Under High Fills.
19. Give Culvert List to Contractor and Engineer of Materials.

### Article 1—Design of Waterway Areas for Bridges and Culverts

Attention is called to Highway Department Technical Bulletin No. 4 "Design of Waterway Areas for Bridges and Culverts". The tables and other data contained in this bulletin will be found very valuable.

### Article 2—Box Culverts

On projects involving concrete box culverts, the Resident Engineer will, immediately after being assigned the project, furnish the Bridge Department (through the office of the Division Engineer) with the necessary data for the checking of reinforcing steel lists. These data will include the length back to back of head walls, the skew angle with the highway center line, the grade line of the invert, the depth of cover over the top slab, whether aprons between wing walls are needed, length and angle of wing walls, cross section of roadway at culvert showing embankment slopes and roadway width, and any other pertinent data.

The Bridge Department will check and approve reinforcing steel lists on the basis of these data and will supply the Resident Engineer with copies of the approved lists.

Box culverts should be designated thus: 6 feet wide by 4 feet high, by writing the words after the proper dimensions instead of merely writing 6 by 4, as has been frequently done in the past.

Please see that this demarkation between width and height is carefully recorded on all profiles, maps and estimates so that there can be no mistake in width and height.

### Article 3—Grade or Slope of Average Stream Bed to be Shown

In addition to the information required on location surveys regarding drainage areas, the grade or slope of the culvert or average grade of the stream bed at the site of the culvert or bridge shall be shown. This information is necessary before the capacity of any culvert can be checked.

### Article 4—Drainage Area to be Determined and Shown on Maps and Profile

All drainage areas should be measured and shown on all location profiles, and in addition a sketch map should be prepared showing all drainage areas. When it is necessary to do field work in order to obtain the information needed to prepare such maps, the areas may be measured in the field by compass and stadia. In extremely brushy country distances may be obtained by pacing.

If all areas are small they may be shown on a tracing of the 400-foot map. If areas are so large that such a scale will make the map cumbersome the 1,000- or 2,000-foot scales may be used. Thin tracing paper will be used for these sketches. The average fall of the drainage area must be noted, approximately four slopes being used, thus:

5 feet in 1,000 feet,
20 feet in 1,000 feet,
50 feet in 1,000 feet, and
100 feet or more in 1,000 feet.

The foregoing applies to all locations except revisions of existing highways where the necessary size of culvert has been established by existing structures.

### Article 5—Kind and Type of Culvert Pipe to be Used

The following kind and type of culverts are to be used under different heights of embankments:

| *Size of Pipe* | *Height of Fill* | *Kind and Type* |
|---|---|---|
| 18″ | 0–26′ | Standard Strength—Conc. or Corr. Iron Pipe |
| | 26′–80′ | Extra Strength—Conc. or Corr. Iron Pipe |
| | 80′–Up | Reinforced Concrete Box Culvert |
| 24″ | 0 –21.5′ | Standard Strength—Conc. or Corr. Iron Pipe |
| | 21.5′–60′ | Extra Strength—Conc. or Corr. Iron Pipe |
| | 60′–Up | Reinforced Concrete Box Culvert |
| Larger than 24″ | 0–21.5′ | Standard Strength—Conc. or Corr. Iron Pipe |
| | 21.5′–50′ | Extra Strength—Conc. or Corr. Iron Pipe |
| | 50′–Up | Reinforced Concrete Box Culvert |

Twelve inch pipe may be specified and used as drains under road approaches, etc.

### Article 6—Inlet and Outlet Ditches

Where inlet and outlet ditches to culverts are to be constructed, they shall be of ample size and proper shape to take the maximum flow, and shall present a neat and workmanlike appearance upon completion of the contract.

### Article 7—Side Ditches

The Resident Engineer must see that all side ditches drain properly.

Side ditches shall be constructed at all places where it is apparent that water cannot properly drain from a low place.

### Article 8—Side Drains

Any culvert which has been previously installed for an owner, which is affected by a new location, shall be relaid in the proper location to fit the new condition at the expense of the Highway Department.

### Article 9—Culverts at New Road Approaches

If necessary, culverts shall be installed at new approach roads and places of entry to property adjacent to the newly located highway.

### Article 10—Surface Ditches

Surface ditches shall be constructed at the top of cut slopes only at places where it is necessary to intercept flow from small channels, which otherwise would run down the slope.

### Article 11—Special Drainage

If springs or soft places should develop as the grading progresses, and for which no provision has been made on the plans, steps should be taken immediately to secure proper sub-drainage. Special attention should be given to the drainage of ground on which high fills are to be placed. It sometimes happens that underground drainage is brought to the ground surface when the weight of the fill takes effect, thus saturating the fill and causing it to slide. Where the area involved is of small extent, a blind drain will often suffice, but if the affected area is large, the Division Engineer should be consulted as to the proper means to use, and to issue the necessary orders for the extra work to be performed.

### Article 12—Culverts to be Located at Right Angles to Centerline

Culverts shall be placed at right angles to the centerline of highway, except where topographical conditions are so extreme as to require a skew location.

### Article 13—Headwalls or Wingwalls to Culverts

If headwalls are required to lead the water to a culvert, they shall be constructed parallel to the centerline of the highway. Wingwalls will be constructed as shown on the plans.

### Article 14—Culvert Location May be Altered After Clearing Site

After the clearing has been completed and the slope stakes are placed, the Resident Engineer can often effect an economy or improvement in culvert location. If the specified location of a culvert appears to be wrong, it shall be located in the proper place.

### Article 15—Additional Culvert Expense to be Approved

If proposed changes involve additional expense, the matter shall be taken up with the Division Engineer before the changes are made.

### Article 16—Inspection of Corrugated Metal Pipe Culvert

(a) Each section of metal culvert pipe should be carefully examined prior to installation for abrasions or defects in the spelter coating or the protective bituminous coating in the case of dipped pipe. All defective sections which cannot be repaired or remedied in such manner as to place them in first class condition, should be rejected.

Join sections of metal pipe properly.

(b) In assembling the various sections forming a metal pipe culvert, care should be exercised to see that the sections are assembled in proper sequence in regard to the flow line, the upstream section being placed inside the downstream section at the joint.

Joint bands should be made to fit the corrugations and be cinched up tight. Where field rivets or bolts are used, care should be exercised to see that they are actually drawn up tight and not simply stuck into the holes, as has been done in many cases observed on inspection. Special precaution should be taken with the riveting and joint installation around the lower portion of the culvert.

(c) Where pipes are bedded in a cushion of sand or soft material, precaution should be taken at the ends of the pipe to avoid erosion or washing out of the cushion later on.

### Article 17—Inspection of Concrete Pipe

(a) Concrete pipe should not be dumped either from a truck or into a trench without the employment of suitable skids and runways. All pipe sections should be inspected for cracks or defective joints before they are placed in position. Cracked or damaged sections should be rejected as plaster patches are very short lived.

(b) A special check should be made of the delivery of pipes from the manufacturers. Repeated instances have been found where truck loads of large size pipe have been sent out from the factory without skids or help to unload the pipe except by dropping from the truck.

### Article 18—Procedure for Installing Culverts Under High Hills

Where the height of embankment to be constructed over a pipe culvert exceeds forty-three (43) feet, the embankment fill shall be constructed in six-inch layers to a height above the top of the pipe equal to the external diameter of the pipe. Each layer shall be thoroughly compacted over the pipe and for a width on each side equal to the external diameter of the pipe by rolling or tamping with mechanical rammers or by hand tamping with heavy iron tampers having a tamping face not exceeding 25 square inches in area.

When the compacted embankment has reached a height above the top of the pipe equal to the external diameter of the pipe, the earth material in the prism directly over the pipe shall be excavated and the trench backfilled with earth material deposited in the loosest possible condition. The remainder of the embankment may then be constructed in the manner specified for embankment construction not involving pipe culverts.

The attention of the Field Engineer is directed to the fact that the purpose of the trenching method is to simulate conditions which normally exist in the construction of a sewer ditch wherein the filling material over the pipe being more compressible than the sides of the trench, transmits the greater portion of its load into the side walls, thus relieving the pipe in large measure from vertical load.

A competent member of the engineering party should be assigned to act as inspector during the installation of culverts and drain tiles and in addition the Resident Engineer should give personal supervision at critical times to see that careless methods of installation are not employed.

### Article 19—Give Culvert List to Contractor and Engineer of Materials

When the requirements for corrugated iron culverts are furnished the contractor for a specific job, a copy of the list should be sent to the Engineer of Materials. This list should show the station numbers and the length of the culverts. This is necessary in order to check all details for the culvert at the factory inspection; as certain contractors have been ordering culverts merely as certain lengths of pipe and not as completed culverts. This does not give the fabricator or inspector sufficient information regarding the reinforced ends or other details necessary in the complete culvert.

## SECTION 9. RIGHT OF WAY

*Article*

1. Width of Right of Way.
2. Special Rights of Way, as Stockpiles, Quarries, Etc.
3. Vacated Streets.
4. Obtain Copy of Description of all Property on New Line.
5. Easements.
6. Tie in Section and Sub-division Lines.
7. All Property and Monument Ties to be Made From Tangents.
8. Tie City Limits and Streets.
9. Preserve all City Monuments.
10. Tie Block and Lot Corners.
11. Encroachments.
12. Locating Engineers to Make Right of Way Report.
13. Preparation of Descriptions.
14. Data to be Submitted.
15. Request for Authority to Purchase Right of Way.
16. No Right of Way Agreements to be Made Unless Authorized.
17. Additional Right of Way.
18. Abandonment or Retention of Old Right of Way.
19. Markers to be Set on State Highway Property.
20. Areas to be Computed.

### Article 1—Width of Right of Way

Right of way boundary lines should be so located as to provide at least 10 feet of width between the edge of slope of cut or fill and each boundary line. It is also desirable that right of way widths be kept reasonably uniform, especially where the work is heavy and right of way costs are moderate. Widening or narrowing the right of way over short sections to meet requirements for individual cuts or fills is not good practice and will, therefore, not be permitted.

The standard width shall be 100 feet for primary highways and 80 feet for secondary highways unless special provision is made by the Construction Engineer for a reduced width.

Width of right of way across national forest lands shall be as set forth in Public Roads Administration regulation L 7 modified by agreement between the Forester and Commissioner as hereinafter cited.

> "*Reg. L-7.* The right-of-way over national forest land for any state or county highway or road which is a part of the approved system of public roads shall be 132 feet in width for roads of class 1 or class 2, and 66 feet in width for roads of class 3 or other county roads of a secondary character; the center line of the highway or road to be the center line of the right-of-way except where otherwise provided by permit. National forest lands within the limits of such right-of-way shall continue to be administered by the Forest Service, but their use for highway or road purposes shall be the dominant use, and no occupancy for other purposes shall hereafter be authorized by the Forest Supervisor or Regional Forester unless approved and concurred in by the appropriate State or county officials, but if agreement can not be reached regarding other forms of use or occupancy regarded by the Regional Forester as essential to the proper use and management of the national forest the matter shall be submitted to the Secretary of Agriculture for final decision."

Later interpretation agreed upon by the Commissioner and the Forester have developed a more liberal policy which is quoted as follows:

> "On road plans for Class 1 and 2 Forest Highways a line will be shown 200 feet on each side of the center line. On Class 3 Forest Highways a line will be shown 100 feet on each side of the center line. This line will be marked with a designation 'Set-back line for special treatment—occupied and used only upon approval of the Regional Forester'.
>
> The showing of this line upon the road plans will assure anyone examining the plans that careful and special consideration is contemplated on this strip by the Forest Service. The showing of this line on the plans does not in any way change the stipulation of Regulation L-7, which is still in effect, and the right-of-way for construction purposes will still be in accordance with this regulation."

While technically the two-chain width of right of way still obtains, the Forest Service recognizes the adjacent area as reserved and will permit its use only by special permission.

Right of way over National Forests shall be acquired by a special use permit from the local forest Supervisor by the Division Engineer.

Right of way over unappropriated and unreserved Public Domain and Oregon and California Revested Land will be acquired by submission of tracings by the Right of way Department. The information necessary to prepare these tracings must be shown on the right of way map. Descriptions will not be necessary.

### Article 2—Special Rights of Way, as Stockpiles, Quarries, Etc.

A "metes and bounds" description shall be prepared for parcels of land which are not a part of the regular right of way.

Before making a survey or preparing a description for a stockpile site the engineer should contact the owner of the property to be acquired and ascertain, if possible, whether the owner is willing to sell and whether the price is reasonable. Property to be used for stockpile sites cannot be condemned.

All stockpile sites are to be purchased, if possible, and not leased. There may be special cases where it is impossible to purchase outright. In such cases the approval of the State Highway Engineer and Commission is necessary before negotiations are started for lease.

### Article 3—Vacated Streets

Vacated streets are occasionally involved in right of way negotiations. The Resident Engineer must ascertain whether or not any streets of this class are involved when procuring property data from county records.

### Article 4—Obtain Copy of Description of all Property on New Line

Form E-47 "Statement of Information" has been prepared for use in acquiring certain information from the county records.

One of these forms must accompany each description submitted to the Construction Engineer, Salem, for checking and should show all information called for. It will be noted that in most instances it will be necessary to contact each of the following offices, viz., County Assessor for assessments, County Recorder for correct ownerships and Sheriff for tax status and address of owner. (In copying names of present owners, it is very important that they be shown *exactly* as written on the recorded deeds.)

It might appear that these data could be shown on the regular description form, but inasmuch as it is necessary to copy the owner's deed, it will be convenient to assemble all other data pertaining thereto on one separate page, thereby keeping the description forms free from notes, etc., which might be confusing to anyone transcribing or otherwise handling them later.

A supply of these forms will be kept in stock at Salem storeroom and may be obtained by regular requisition.

### Article 5—Easements

In preparing descriptions for right of way within cities, towns or thickly settled areas, it is sometimes necessary or convenient to take slope easements for slopes in lieu of purchasing additional width of right of way. When this condition exists, the description for easement should be prepared separately from and submitted along with the regular right of way description.

### Article 6—Tie in Section and Sub-division Lines

All location lines shall be tied to section and sub-division lines. Preliminary lines will be tied only to such corners as are convenient, unless the preliminary survey is not to be followed soon by the location, in which case, all available corners will be tied to the preliminary survey.

Ties on a section or a sub-division line shall be made to corners, if available, on both sides of the survey, and direct intersection made with the property line, noting the angle such line makes with the survey as well as the distance to each corner. (See Sec. 5, Art. 15.)

### Article 7—All Property and Monument Ties to be Made From Tangents

All property, street, road and city lines which are crossed by the survey shall be tied to the tangent or semi-tangent and not to the curve. All field ties shall be shown on 1 inch equals 100 foot scale maps.

### Article 8—Tie City Limits and Streets

Obtain direct ties to all city limit and street lines which are crossed by the proposed line.

### Article 9—Preserve all City Monuments

All city monuments must be preserved, either by being left in place and protected by covers or referenced with permanent markers. Wherever any block or lot corner comes within the right of way the corner shall be set back along the property line in a manner at least as permanent as the original marker.

### Article 10—Tie to Block and Lot Corners

Where the line crosses subdivided property, such as city blocks, at least two (2) property corners in each block shall be tied to center line if they can be found.

### Article 11—Encroachments

A tracing map shall be prepared showing each railroad encroachment involved on any project. Cross sections shall be shown on such maps in the best manner possible to indicate the relationship between the center line of the railroad track, (not center line of railroad right of way) and our located center line of the highway throughout the encroachment.

About 5 or 6 cross sections shall be selected and shown on the map. One of these shall be a

section at the closest point to the railroad tracks, also sections at each end of the proposed encroachment.

A tie shall be made to the stationing of the railroad from our center line. All details of this tie shall be clearly shown on the encroachment map. The railroad centerline shall not be projected onto the map but shall be platted from actual measurements to the center of the track.

Cross sections shall be taken every 50 feet throughout the area of encroachment. These shall be platted on a roll and shall be submitted with the map. Typical sections shown on the map shall be taken from this roll. These measurements shall be taken by means of a steel tape. At times it might be necessary to employ a transit in making these measurements.

Encroachment maps should be made up using a scale of one inch equals one hundred feet. The cross sections to be imposed on this map should be shown with a scale of one inch equals ten feet. If several encroachments are involved, they may be placed on a continuous roll tracing map.

Encroachment of telephone lines, power lines, sign boards, etc., shall be described briefly. Descriptions may be general in nature and merely state that certain property from station to station is encumbered by a power line, sign board, etc.

### Article 12—Locating Engineers to Make Right of Way Report

A "Locating Engineer's Right of Way Report" form shall be used by all engineers making highway location surveys over a section which involves the purchase of new or additional right of way.

This report form shall be completely filled in and shall then be dispatched as indicated on the form.

Additional copies may be obtained from the Construction Engineer's office (See sample at end of this section.)

### Article 13—Preparation of Descriptions

All questions as to the exact location of the center line should be settled before any right of way descriptions are written.

All information necessary for the writing and checking of right of way descriptions, encroachments, etc., shall appear on the 100 foot to the inch location map. When the map is completed, it should be sent to the Construction Engineer for tracing. The original will then be returned.

When any alterations or additions are made on the original map, the necessary data, preferably on a print, shall be forwarded to the Construction Engineer so that the tracing may be corrected.

Form E-31 is to be used for preparation of "metes and bounds" descriptions, and form E-151 for "center line" descriptions. Samples of forms E-31 and E-151 will be found at the end of this section.

These forms are designed, when properly prepared, to furnish all of the data necessary for the preparation of "center line" and "metes and bounds" descriptions. Resident or Locating Engineers should personally check each description before submitting same to the Division Engineer, as all information must be shown in conformance with these instructions.

A stock of these forms is kept at Salem and may be obtained by regular method of requisition.

All surveys for the purpose of obtaining data from which to write descriptions for right of way through properties which are located within the boundaries of *platted* and *recorded tracts* should be very carefully made with respect to obtaining the necessary ties to the lot and block corners of the properties through which the highway center line passes. *All* descriptions of parcels of *lots* or *blocks* which are to be acquired must be written as "metes and bounds" descriptions, except where the parcel to be acquired is a strip of uniform width along one side of a lot, block or sub-division. In which case the parcel may be described as a portion of the lot, block or sub-division. For example: the easterly 10 feet of Lot 7, Block 13, in Blacks Addition to the city of Roseburg, Oregon. The premises must be described in such a manner that the shape, location and net area can be determined without the aid of a highway alignment map. The center line of the highway should be definitely tied to at least one corner of the property involved, preferably by course and distance of the lot or block line produced to an intersection with said center line. Wherever the size of the property to be acquired justifies, a tie to the center line should be made at each property line intersected by the right of way line. In any event, the dimensions of the parcel or parcels to be acquired must be made a part of the description.

In many instances it is necessary to acquire an entire lot or block which area includes more property than actually required, this additional property is sometimes of such size and shape that it can be disposed of by the State to good

advantage. It is desired, therefore, that when writing descriptions for properties of this character, that the description for the regular right of way be written in the usual manner across the property classifying it as parcel "1" and a regular metes and bounds description be made of the remaining parcel or parcels, as the case may be, classifying them as parcel "2" and "3", etc. It will then be very simple for this department to make a deed for any remaining portion of a tract that is to be disposed of without having to go to the trouble of making a survey, or having a new description prepared and checked.

Curves should be described by the length of the radius and the bearing and length of the subtended chord. Where spiral curves are involved, the distance and bearing of the subtended chord of the spiral shall be a part of the description.

Center line descriptions will be used for procuring all rights of way over properties which are not platted.

All descriptions, whether center line or metes and bounds, shall be made in as simple a form as possible and repetitions avoided.

In preparing forms E-31 and E-151, give the grantor's true name exactly as shown in the deed record; if married, give wife's name also.

Give the volume and page numbers of the deed record wherein the grantor's deed to the property is recorded.

Give the location of the parcel of land being acquired, by Government sub-division as nearly as possible, such as "N. E. ¼ of N. W. ¼" or "N. ½ of N. W. ¼". This should be given regardless of whether the parcel is a portion of D. L. C. or not, as this makes it possible to locate the said parcel on any map. This is not necessary when the parcel is a portion of a recorded town plat.

If the beginning point is on the right of way line, state which side, such as *"Northerly," "Southerly," "Easterly"* or *"Westerly."* Do *not* give it as *"right"* or *"left."*

The beginning and ending points of a center line description should be the stations opposite the extreme ends of the strip of land being acquired and should be referred to as *"opposite and—feet distant from which point the—line of the said strip of land intersects the—line of said property."*

The beginning point should also be described with reference to the nearest known Government corner unless the parcel is a portion of a recorded plat, in which case it should be described with reference to a corner of the lot in which the parcel is located. A corner of the lot itself would be preferable as a beginning point, where possible.

If the beginning point is marked by a monument of any kind, such as an *"iron bar," "iron pipe"* or *"stake,"* it should be so stated.

In the description, refer to all known points or lines that are a matter of record, such as *section corners, lot* or *block corners, government sub-division lines, property lines* or *existing right of way lines,* keeping in mind that our *proposed* right of way lines should *not* be referred to as *"right of way lines,"* as they do not have legal status as such until the deeds for same have been recorded. Such proposed right of way lines should be referred to as *"a line—feet distant from and parallel to the said center line."* When a tract of land adjoins right of way that has previously been acquired, the boundaries of such right of way may be referred to as *"right of way lines,"* but the distance from the center line should, also, be mentioned.

All right of way descriptions must be submitted to the Construction Engineer, Salem, through regular channels for checking.

### Article 14—Data to be Submitted

The following data shall be included with all property descriptions:

(a) Notes for all field ties.
(b) Description of each owner's property through which the proposed line runs, to be obtained from County Records, Form E-47.
(c) Notes or advice regarding Meridian determination.
(d) Coordinate sheets.
(e) Calculation sketch sheets.
(f) Locating Engineer's Right of Way Report. (To be submitted only on new located line covering a section of highway and not for individual parcels.)
(g) Form E-29, Original Authorization request.

The tracing of the 100-foot scale map will be colored by the Right of way Department.

### Article 15—Request for Authority to Purchase Right of Way

Resident Engineers will submit an "Original Authorization", Form E-29, to negotiate for *each* individual parcel of property that is to be acquired by the Right of way Department for any

use whatsoever (right of way over new projects, material sources, stockpile sites, also including properties that are to be acquired for purpose of trades or adjustments).

When an "Original Authorization" has been approved, any subsequent change in widths of right of way, dimensions of parcels to be acquired, or other changes must be outlined upon a second request for and approval obtained before purchasing.

One copy only of this form must accompany each description when submitted. All information regarding the reason for acquisition, the location, the ownership and the approximate value of each parcel shall be carefully noted. Any authority to purchase property, that is in any sense irregular or complicated by agreements that will involve special consideration of the Construction or Right of way Department, must be clearly outlined and explained in full detail.

### Article 16—No Right of Way Agreements to be Made Unless Authorized

Agreements for the purchase or lease of right of way, or sources of materials, storage sites, etc., shall be made contingent upon the approval of the State Highway Commission and not otherwise.

### Article 17—Additional Right of Way

It is frequently found necessary to purchase additional right of way after construction work has been started in order to have sufficient width for fill and cut slopes. The right of way widths are of such importance that they should receive particular attention of the Locating Engineer. Before right of way descriptions are submitted, they should be carefully checked in detail to see that the proper widths have been provided.

### Article 18—Abandonment or Retention of Old Right of Way

(a) *Abandonment*—Quite frequently on a new location or realignment of a section of highway, it will develop that certain parts of the old highway will be of no further use for highway purposes.

Where it is proposed to abandon portions of an old highway, a report, in duplicate, of proposed abandonment of such highway right of way shall be made and sent through regular channels to the Construction Engineer. This report should be accompanied by a description of the right of way involved and by a map of sufficiently large scale colored to clearly indicate the parcels to be retained and/or abandoned.

Forms for use in making up this abandonment report are obtainable at the office of the Construction Engineer.

(b) *Retention of Old Right of way*—Portions of old right of way which remain outside of the uniform right of way lines of the revised alignment and which are desirable to retain for the purpose of storage sites, material sources, building sites, etc., should be definitely described and marked in reference to the new highway location in such a manner that said parcel may be accurately located.

Right of way markers shall be placed at the intersection of the new and old right of way lines and on the old right of way line at all curve points. (See under "100-foot Detail Map", Sec. 11, Art. 6.)

### Article 19—Markers to be Set on State Highway Property

(a) Markers are to be set on all Highway Department property at the following points:

1. Every change of right of way width.
2. All corners of property owned by the Highway Department.
3. On right of way lines opposite all curve points, i. e., P. S., P. S. C., P. C. S., P. T.
4. On the right of way lines of tangent and long curves at intervals of not more than 1,000 feet.

(b) Marking shall be accomplished by means of an iron pin, placed on the exact corner or angle and a standard white post placed alongside the pin so that it may be easily located.

The iron pin should be about 3/4 inch in diameter by 30 inches long and should be driven into the ground so that about one inch protrudes. The distance from center line to the pin should be carefully chained and the pin should be center punched to serve as a permanent center line reference. Iron pins must be requisitioned from the Equipment Department.

Standard guard posts shall be made of 4-inch by 4-inch material and must be requisitioned from the Sign Department. Guard posts are to be set approximately six inches from each iron pin and entirely on the right of way.

Installation of right of way markers shall be made by the Resident Engineer's forces before submission of the final records.

Data in connection with right of way markers shall be recorded on the construction map or profile.

(c) It is the responsibility of the Resident Engineer, on each project under his charge, to attend to the marking of all property under control of the State Highway Department and to promptly notify the Construction Engineer, through the regular channels, when the right of way markers have been set.

(d) *Leased Property Need Not Be Marked*—Property which is under lease need not be marked in any manner other than by temporary hub with guard post placed alongside.

### Article 20—Areas to be Computed

The measurement of areas by means of planimeters is satisfactory in cases where land values are not great. However, where the computations can be made reasonably easy, the areas should be calculated. Areas of city properties are all to be mathematically determined in each case.

Form R-36--4M--8-44

OREGON STATE HIGHWAY COMMISSION
Salem, Oregon

**ORIGINAL AUTHORIZATION FOR NEGOTIATION**

Date January 26 19 44

R/W Serial No. ....

Highway John Day County Grant

Section Prairie City Extreme Limits, Sta. 708+80.8 to Sta. 710+52.9

Name of Owner W. R. Clark Address Prairie City

Agent's Name and Address

☒ Purchase, ☐ Lease, ☐ Easement of Acres 2567 Sq. Feet

Subdivision NW¼ SW¼ Section 2 Twp. 13 S. Range 33 E. W. M.

City Prairie City Addition Block Lot

Property to be acquired by ☒ State, ☐ County, ☐ City for the following purpose:

Right of Way

Estimated approximate cost: $ 50.00

Option ..... taken for ..... months. Beginning .....

Property is ☐ undeveloped, ☐ pasture, ☐ cleared, ☐ farm, ☒ suburban, ☐ city, ☐ cultivated.

Width of Right of Way to be taken:

North 40 ft. width ☒ uniform ☐ variable, maximum ..... ft.
of Center Line

..... ft. width ☐ uniform ☐ variable, maximum ..... ft.
of Center Line

Submitted by

Recommended for Approval (s) J. M. Smith
Engineer

Division Engineer APPROVED

Construction Engineer State Highway Engineer

Date

Salem Map File No.

STATE PRINTING DEPT

Form R-47--5M--8-44

OREGON STATE HIGHWAY COMMISSION
Salem, Oregon

STATEMENT OF INFORMATION

R/W File No. .....

Statement of information regarding property from which a parcel is to be acquired by ☒ purchase ☐ lease for use as Right of Way
(Purpose for which property will be used)

| | |
|---|---|
| Highway John Day | Date March 12 1944 |
| Section Prairie City | Subdivision NE ¼ of the S W ¼ |
| County Grant | Section 2 Twp. 13 S Range 33 E, WM |
| City Prairie City | Lot Block |
| Addition | Near Mile Point 176.2 |
| Present Owner Walter R. & Lucy B. Clark | Address Box B, Prairie City, Ore. |
| Grantor (Previous Owner) Zung On | |
| Deed Dated May 5 1930 | Deed Recorded April 22 1937 Book 53 Page 473 |
| Assessed Valuation: Land $ 300 | Improvements $ 1700 |
| Taxes are delinquent for years 19 42 | Taxes paid last 19 41 |
| Remarks: | |
| The above data obtained from Grant | County Records by Thompson |

Description of Property Described in Said Record

Commencing at the northeast intersection of Front and Main streets whence the the southeast corner of Feet's Addition to Prairie City bears N83°20'E., 58.9 feet; thence N57°50'E along the north boundary of the John Day Highway a distance of 171.6 feet; thence N 18°50'W., a distance of 50 feet; thence S 75°50'W., 171.6 feet to the east side of Main street; thence S 18°29'E along the east side of Main street, 50 feet to the point of beginning. Conta ining .2 acre.

(Note: Description of other parcels are contained in this deed record.)

(If the deed record contains descriptions of other parcels of land, please so note on this form, as shown in the above note)

OREGON STATE HIGHWAY COMMISSION

SALEM, ORE.

LOCATING ENGINEERS RIGHT OF WAY REPORT.

County Klamath. Date December 6 1944.

Highway The Dalles - California

Section Chemult - Lobert. Station 610 to 3280

The following questions must be answered in full at the time the survey of the project is completed and turned in to the Division Engineer, one copy to be sent direct to the Construction Engineer:-

1 - Are there any encroachments on railroad property yes.

2 - Are typical sections of the encroachments made up and included in the plans? no. Over-crossing near Chemult.

(List station numbers inclusive, of encroachments

654+40 to 661+10

3 - Are all descriptions prepared & ownerships checked? yes
(Attach hereto extra sheet showing ownerships involved, acreage and assessed valuation.)

4 - Have you closed traverse on all metes and bounds descriptions? yes

5 - On your written descriptions have you made mention of, or provided for easements required for slopes yes, retaining walls none, drain ditches yes, siphon boxes none, irrigation ditches yes.

6 - Have descriptions been made up for quarries no, gravel pits no, stock pile sites yes, hauling road easements no, channel changes yes ? one description prepared for cinder pit.

7 - Does proposed construction interfere with any water mains? no, sewers no, gas mains no, other conduits none ?(If so attach separate sheet giving ownerships and other available data.)

8 - Do any power poles require moving? yes Are they located on R/W now owned by State no. Company name California-Oregon Power Co.

9 - Do any telephone or telegraph poles require moving yes ?Are they located on R/W now owned by the State no .Company name Pacific Telephone & Telegraph Co., and West Coast Telephone Co.

10 - Are there any buildings or other structures that will require moving? yes .(If so, attach separate sheet giving size, type, center line tie, ownership and approximate value, and probable disposition of same.)

11 - Are there any connections to be made to existing roads that require additional R/W yes. Are descriptions prepared for this R/W yes

12 - Have you submitted samples of surfacing materials from the sources indicated, to the Testing Laboratory yes.

13 - Have you checked the answers on the preceeding 12 questions yes

Signature (s) by Loc. Engr.

Two attachments for item 10.

OREGON STATE HIGHWAY COMMISSION

SALEM, ORE.

REPORT ON PROPOSED ABANDONMENT OF HIGHWAY RIGHT OF WAY

Highway Pacific Number 1 Date Jan. 8 1945.

County Douglas

Section Beginning 4.5 miles south of Roseburg at M.P. 204.37, ending at
(Describe approximate beginning and ending point with reference to towns and mile points.)
M.P. 204.70

Length of Section to be abandoned Sta. 458+20 to Sta. 475+65
Miles 0.33 Acres 2.4

Width of Right of Way 60 feet.

Type of Existing Improvement Oil Macadam surfacing

Property originally acquired by court resolution - Deeds to County - Deeds to State. (If by deed, were there any restrictions? none

Description and map covering section to be abandoned must be attached hereto.

Property will revert to Abutting property owners
(County or abutting property owners.)

Reason for abandonment This section will no longer be needed to serve people living thereon.

Would this property be of any further value to the State of Oregon for highway purposes? no

Abandoned highway will not be maintained by County - City.

Abandonment of this section will not involve purchase of new right of way for connecting roads or private outlets.

(If so, give details of length, costs, etc.

Approved: Approved:

Division Engineer. Construction Engineer.

Form B 31—3M—11-45

OREGON STATE HIGHWAY COMMISSION

## DESCRIPTION OF METES AND BOUNDS

Description of Property to be Purchased
(Purchase, Lease or Easement)

for use as Right of Way
(State purpose for which property is to be used)

Description prepared by Jones, March 14, 1945; Checked by Brown, March 14, 19 45

Owner Anson P. Bowen

Sage Creek - Red Butte Section, Modoc Highway.

A parcel of land lying in the S. E. ¼ of the N. E. ¼

of Section 12, Twp. 41 S., R. 47 E., W. M.,

Malheur County, Oregon, and being a portion of the following described property:

That tract of land which was conveyed by that certain deed to Anson P. Bowen

recorded in Book 26, Page 212 of Malheur County Record of Deeds.

The said parcel being described as follows: Beginning at a point which is the southeast corner of the foregoing described property, said point being marked by an iron pipe and being the intersection of the northerly right of way line of the Central Pacific Ry., and the west line of Pine Ridge County Road; said point also being 40 feet distant southerly from (when measured at right angles to) the located center line of the Modoc Highway at Engineer's Station 321+03; said point also being 23.2 feet north and 460.4 feet east of the southwest corner of the Elijah Kamp D. L. C. No. 96; thence N. 68° 31' E., along the northerly right of way line of the Central Pacific Ry. a distance of 494.4 feet to the west line of said D. L. C. No. 96, which line is also the west line of said property; thence N. 0° 16' E. along the west line of said property a distance of 87.44 feet to a point which is 40 feet distant northerly from (when measured at right angles to) the center line of said highway at Engineer's Station 315+75.6; thence parallel to and 40 feet distant from said center line along the arc of a spiral curve left, (the long chord of which curve bears S. 67° 56' E., 130.74 feet) a distance of 130.76 feet; thence S. 68° 31' E., parallel to said center line a distance of 41.3 feet to the west line of Pinecrest Cemetery; thence South along the west line of the said cemetery a distance of 25 feet to the southwest corner thereof; thence East along the south line of said cemetery a distance of 300 feet to the west line of said Pine Ridge County Road; thence South along the west line of said county road a distance of 178.5 feet to the point of beginning.

The parcel of land to which this description applies contains 1.13 acres, of which

_____ acres lie within the existing right of way, title to which hereby is acknowledged to be in the public, and _____ acres lie outside of the existing right of way.

Form E-151—5M—3-42

OREGON STATE HIGHWAY COMMISSION

(Center Line Descriptions)

Description of Property to be Purchased
(Purchase, Lease or Easement)

for use as Right of Way
(State purpose for which property is to be used)

Description prepared by Hansen, Feb. 2, 19 45; Checked by Slocum, Feb. 14, 19 45

Owner E. F. Collins

Wall Creek-- Siskiyou Summit Section, Pacific Highway.

A parcel of land lying in the N. E. ¼ of the S. E. ¼

of Section 17,

Twp. 40 S., R. 2 E., W. M., Jackson County, Oregon, and being a portion of the following described property:

That tract of land which was conveyed by that certain deed to E. F. Collins

recorded in Book 24, Page 165 of Jackson County Record of Deeds.

The said parcel being all that portion of the foregoing described property included in a strip of land of variable ~~300~~ feet in width, ~~feet~~ on each side of the center line of the Pacific highway as said highway has been relocated over and across or adjacent to the said property; the location of the said strip of land (insofar as it encroaches upon said property) being determined by the said center line from Station 461+63.6 to 476+24.3 which portion of center line is described as follows:

Beginning at a point which is Engineer's center line Station 461+63.6 opposite and 100 feet distant from which point the easterly line of the said strip of land intersects the north line of said propery; said point being 8 feet north and 366 feet west of the E. ¼ corner of Sec. 17, Twp. 40 S., R. 2 E., W. M.; thence (over)

(For further description turn bottom of sheet up and continue on back. Double space all notes.)

The widths (in feet) of the strip of land above referred to are as follows:

| Station | to | Station | Total Width | Width on easterly Side of Center Line | Width on westerly Side of Center Line |
|---|---|---|---|---|---|
| 461+63.6 | to | 462+50 | 200 feet | 100 feet | 100 feet |
| 562+50 | to | 464+50 | 170 feet | 70 feet | 100 feet |
| 464+50 | to | 476+24.3 | 200 feet | 100 feet | 100 feet |

The parcel of land to which this description applies contains 6.28 acres, of which 0.39 acres lie within the existing right of way, title to which hereby is acknowledged to be in the public, and 5.86 acres lie outside of the existing right of way.

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(Reverse side of form E-151)

on a spiral curve right, (the long chord of which spiral bears S 15° 26' W., 276.62 feet) a distance of 277 feet; thence S 18° 50' W., a distance of 40 feet; thence on a spiral curve left, ( the long chord of which spiral bears S 12° 10' W., 397.87 feet) a distance of 400 feet; thence on a 572.9 foot radius curve left, (the long chord of which curve bears S 6° 34' E., 108 feet) a distance of 108.2 feet; thence on a spiral curve left, (the long chord of which spiral bears S25° 19' E., 397.87 feet) a distance of 400 feet; thence S 32° 59' E., a distance of 255.5 feet to Station 476+24.3, opposite and 100 feet distant from which station the easterly line of said strip of land intersects the south line of said property.

## SECTION 10. DESIGN

*Article*

1. Standards to be Used.
2. Spirals.
3. Run Off.
4. Superelevations.
5. Retaining Walls.
6. Footpaths to be Constructed Near Congested Districts.
7. Oil Mat Surface Treatment and Bituminous Macadam.

DESIGN

### Article 1—Standards to be Used

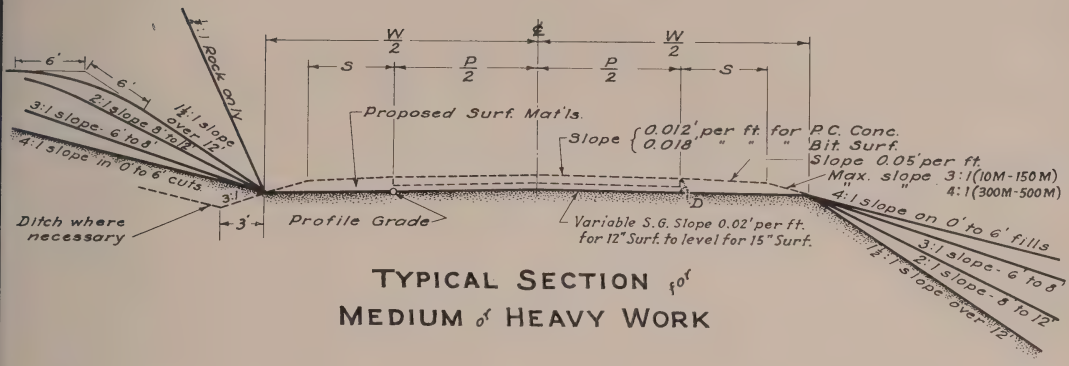
The standards for design as set forth in this section shall apply to all surveys in rural areas of the state. Design for congested areas, grade separations, etc., will require special treatment and Locating Engineers shall consult with the Division Engineer on these special problems.

The Construction Engineer or Division Engineer will instruct as to the class of roadbed to be used for each survey.

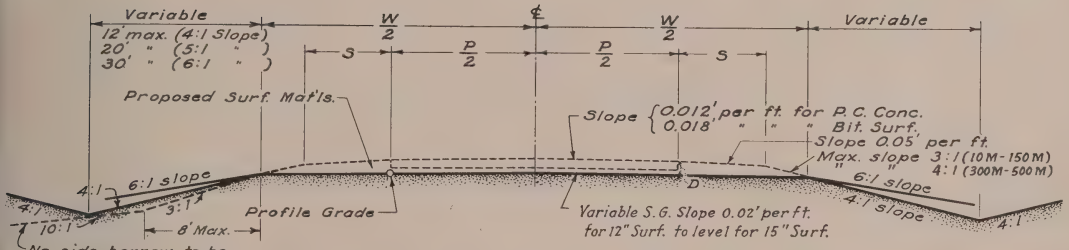
No deviation from the standards will be permitted without approval of the Division or Construction Engineer.

OREGON STATE HIGHWAY DEPARTMENT

# STANDARD ROADBED SECTIONS
FOR
# TWO-LANE HIGHWAYS




## TYPICAL SECTION for MEDIUM or HEAVY WORK




## TYPICAL SECTION for LIGHT WORK

| CLASS of ROADBED | GRADING WIDTH "W" | | | | PAVEMENT WIDTH "P" | SHOULDER WIDTH "S" | NOMINAL SURFACING DEPTH "D" |
|---|---|---|---|---|---|---|---|
| | 3:1 SLOPE | 4:1 SLOPE | 5:1 SLOPE | 6:1 SLOPE | | | |
| 500 M | | 50' | 52' | 54' | 24' | 10' | 12" |
| 300 M | | 44' | 46' | 48' | 22' | 8' | 12" |
| 150 M | 38' | 40' | 42' | 44' | 20' | 6' | 12" |
| 50 M | 34' | 36' | 38' | 40' | 20' | 4' | 12" |
| 10-25 M | 30' | 32' | 34' | 36' | 20' | 2' | 12" |

*The tabulated grading widths are designed for minimum finished roadbed requirements based on the indicated nominal depths of surfacing, subgrade to top of pavement.*

Aug., 1945

Table 1

## OREGON STATE HIGHWAY DEPARTMENT

Minimum Standards for Design of Highways Depending upon Traffic Density, Character of Traffic, Assumed Designed Speed and Topography. (The required sight distances are based on safe stopping distances for various speeds.)

| Highway Classification: Volume of traffic anticipated per hour | Highway Classification: Safe speed (M. P. H.) | Maximum horizontal curve permitted—degrees | Width of sub-grade including ditches—feet | Distance from center line to side obstruction 1:1 slope—feet | Additional width required on inside blind curves—feet | Horizontal Sight Distance: Required—feet | Horizontal Sight Distance: Provided—feet | Passing sight distance required—feet | Maximum grade 3,000 feet or under—per cent | Maximum grade 3,000 feet or over—per cent | Minimum length of vertical curves in sags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 500M | 70 | 3° | 50 | 29.5 | ..... | 600 | 650 | 2900 | 5 | 5 | $L = (G - G_1)\ 100$ |
| | 60 | 6° | 50 | 29.5 | ..... | 475 | 459 | 2900 | 6 | 5 | |
| | 50 | 10° | 50 | 29.5 | ..... | 350 | 356 | 2900 | 6 | 5 | |
| 300M | 70 | 4° | 44 | 26.5 | 4.0 | 600 | 541 | 2900 | 5 | 5 | |
| | 60 | 6° | 44 | 26.5 | 3.0 | 475 | 442 | 2900 | 6 | 5 | |
| | 50 | 10° | 44 | 26.5 | ..... | 350 | 344 | 2900 | 6 | 5 | |
| 150M | 70 | 4° | 38 | 23.5 | 7.0 | 600 | 520 | 2900 | 5 | 5 | |
| | 60 | 6° | 38 | 23.5 | 6.0 | 475 | 424 | 2900 | 6 | 6 | |
| | 50 | 10° | 38 | 23.5 | 3.0 | 350 | 330 | 2900 | 6 | 6 | |
| 50M | 70 | 4° | 34 | 21.5 | 9.0 | 600 | 497 | 2900 | 5 | 5 | |
| | 55 | 8° | 34 | 21.5 | 10.0 | 425 | 352 | 2900 | 6 | 6 | |
| | 45 | 12° | 34 | 21.5 | 5.0 | 320 | 288 | 2900 | 6 | 6 | |
| 25M | 60 | 6° | 30 | 19.5 | 10.0 | 475 | 387 | 2900 | 5 | 5 | $L = (G - G_1)\ 50$ |
| | 45 | 12° | 30 | 19.5 | 7.0 | 320 | 274 | 2900 | 6 | 6 | |
| | 35 | 18° | 30 | 19.5 | 2.0 | 235 | 224 | 2900 | 6 | 6 | |
| 10M | 45 | 12° | 26 | 17.5 | 9.0 | 320 | 259 | 2900 | 6 | 6 | |
| | 35 | 18° | 26 | 17.5 | 4.0 | 235 | 212 | 2900 | 7 | 7 | |
| | 20 | 56° | 26 | 17.5 | ..... | 115 | 121 | 2900 | 7 | 7 | |

| Minimum vertical sight distance required: Degree of curve | Minimum vertical sight distance required: Feet |
|---|---|
| 0–4° | 600′ |
| 5° | 545′ |
| 6° | 475′ |
| 7–8° | 425′ |
| 9–11° | 350′ |
| 12–13° | 320′ |
| 14–15° | 275′ |
| 16–23° | 235′ |
| 24–27° | 200′ |
| 28–55° | 150′ |
| 56°+ | 115′ |

In accord with the decision of the American Association of State Highway Officials, highways are now classified according to (1) traffic density, (2) character of traffic, and (3) assumed design speed. The assumed speed is further effected by the character of the topography which has a material effect upon the cost of construction.

The volume of traffic shown indicates the average maximum hour-traffic during the summer months. The letter M indicates that the traffic is mixed in character, being in part passenger cars and in part trucks. The speeds are indicative of the character of the topography. The first speed indicates a design for level country; the second, a design for rolling country and foothills; the third, a design for heavy mountain construction. In all cases, the curvature used must provide the requisite horizontal sight distance for the maximum safe speed on the curves by widening the inside of blind curves in accordance with Table No. 2. The vertical sight distance on curves should be the requisite amount for the safe speed of the curve in question. Locating Engineers are requested to use the maximum curves only where topography or other conditions of the terrain make the use of lighter curves too expensive. Both horizontal and vertical sight distances are the distances from the observer's eyes, assumed to be 4½ feet above the pavement grade, to the last surface of pavement visible in the opposite traffic lane. Where possible passing sight distance should be increased to 3,200 feet.

### EXPLANATION OF TABLE No. 1

*Columns 1 and 2.* The Special Design Committee of the American Association of State Highway Officials adopted as standard a system of classifying highways according to density, character and speed of traffic. Traffic density is expressed as the average maximum hourly traffic for each Saturday and Sunday of the months of June, July, August and September. In determining the traffic density, it is expected that the current traffic density amounts, for the highway in question, be modified to equal the estimated average traffic density for an average of the ten-year period subsequent to the adoption of the design.

The assumed design speed is expressed in miles per hour. The character of the traffic is designated by the letters P, M, and T, respectively. The letter P refers to the traffic that is essentially passenger car in character; the letter M, to the traffic that is essentially mixed in character; and the letter T to

truck traffic. To illustrate: The symbol 500-M-50 means that the highway is designed to carry 500 vehicles of mixed traffic per hour during peak hours at a maximum speed of 50 miles per hour.

Three speeds in relation to the topography are shown for each classification. The highest speed contemplates a design for level country; the medium speed, a design for rolling country; and the lowest, a design for mountain country. Since the costs of construction vary with the type of topography, the variation in design standards is necessary to keep costs in some relation to the income generated by the traffic.

*Column 3.* This column designates the maximum degree of curve to be used for each type of country in the highway classification in question. Note that, in general, the standards for curvature have been raised, and in a few cases lowered, as compared to former standards. The maximum curves have been adjusted to correspond with the designed speed in order to make a truly balanced design.

*Column 4.* This column shows the standard width of grade, which grade widths are unchanged from former standards.

*Column 5.* The distances shown in this column are the distance from the center line to the side obstruction at a point 4.5 feet above the grade level. The side obstruction is assumed to be the cut bank of the roadbed rising from the ditch line, at the edge of the roadbed, on a 1:1 slope.

*Columns 6, 7 and 8.* Column 6 indicates the additional roadbed width required in order to attain the sight distance shown in Column 7. The distances from center line to side obstruction given in Column 5 provide the sight distances shown in Column 8. You will note that in certain instances the sight distances provided do not equal the sight distances required. Since the sight distances required equal the stopping distances for the designed speeds, a safe design requires the grade widening shown when blind curves are encountered. Column 8 shows the sight distances provided by the normal width of the roadbed. When they are less than the values given in Column 7, widening of the roadbed by the widths shown in Column 6 is necessary, in order to afford the necessary stopping distance for motor vehicles, in accord with the designed speed of the highway. The sight distance is thus made equal to the stopping distance for each speed.

*Column 9.* This column shows the minimum passing sight distance, a uniform distance of 2,900 feet for all highways, based on the theory that the passing maneuver cannot be accomplished with safety save on tangents and very light curves, which normally will allow maximum speeds of 70 miles per hour at times when highways are not congested. The minimum safe-passing distance for designed speed of 70 miles per hour is 2,900 feet. When possible 3,200 feet or more should be provided.

*Column 13.* This column shows the vertical sight distance from the operator's eye, assumed to be 4½ feet above the pavement, to the last section of pavement visible on the vertical curve. Attention is called to the fact that this is but half of the distance usually assumed as the vertical sight distance. The values of the vertical sight distances shown are computed from the formulas shown on the accompanying sheet entitled "Sight Distances on Vertical Curves."

*Sight Distance.* Attention is called to two types of so-called sight distance. The nonpassing sight distance equals the distance required to bring the vehicle to a stop and is a function of the perception time and the reaction time of the operator and the braking distance of the vehicle. The nonpassing sight distance is, therefore, equal to the stopping distance. The passing sight distance equals the distance required for a safe passing maneuver. The passing sight distance is a function of the perception and reaction time of the driver, the rate of acceleration of the passing vehicle, the speed of this vehicle and of the vehicle being passed, and the assumed speed of the vehicle that may be approaching. This distance will vary over a wide range from about 600 feet to as much as 3,200 feet.

Some times the passing vehicle is required, by reason of approaching traffic, to slow down to the speed of the vehicle ahead and then to accelerate in order to attain a greater speed, to pass the vehicle. Competent drivers accelerate in second gear so as to gain speed quickly and to shorten the passing distance. At other times, when there is no approaching vehicle in sight, an immediate passing can be made in a rather short distance.

In order to arrive at a passing distance that is unquestionably safe, the assumption is made that the passing vehicle passes a single vehicle proceeding at a speed of ten miles an hour less than the designed speed of the highway. Rather long perception and reaction time is taken and the rate of acceleration of the passing vehicle is assumed to be low. The passing vehicle is presumed to slow down to the speed of the vehicle being passed then to accelerate to the design speed and to safely clear the passed vehicle and to return to the right-hand lane in time to avoid conflict with the third vehicle approaching from the opposite direction at a speed equal to the design speed of the highway. For a design speed of 70 miles per hour, this passing sight distance will vary from 2,600 to 3,200 feet, depending upon assumptions made on perception-reaction time and upon the accelerating power of the vehicle, and a sight distance of 2,900 feet has been selected for purposes of design.

One of the major factors in design is the sight distance to be provided on vertical curves particularly on tangents. Drivers sense sight impairment more on horizontal curves than on vertical curves. In the case of two approaching maximum grades over a mountain summit, it is practically impossible to get a sight distance between approaching vehicles greater than 1,200 feet which corresponds to 600 feet from eye to pavement. To provide a safe design under such conditions, the two-lane highway may be widened to a four-lane highway. This will also assist passenger cars, in congested sections, to pass around trucks on the ascending grades. In marking no-passing zones, provision has been made on the Oregon system to permit passing on vertical curves with a sight distance of 1,200 feet. While this is not

absolutely safe, and the signs so indicate, many of the passings are immediate in character, which can be accomplished in a short distance, while modern automobiles can accelerate so rapidly that a delayed passing maneuver can be safely made in 1,200 feet, by such vehicles, under nearly all conditions.

Drivers are accustomed to passing on the longer vertical curves. Since no vertical curves provide a sight distance of 2,900 feet, it was considered best so to mark those vertical curves providing a sight distance of at least 1,200 feet, to permit passing, as otherwise the public might disregard the marking convention entirely and attempt passing on shorter vertical curves where extreme hazard exists.

Special attention must be given to horizontal passing sight distance in the design of all highways and these clear passing places should be located at frequent intervals and shown on the plans. On any class of highway the safe-passing distances remain the same, but they should be provided at more frequent intervals on the higher type roads. The spacing of safe-passing places obviously will vary and is affected by the location of horizontal curves and the spacing of vertical curves. This safe-passing feature is extremely important and must be borne in mind in designing all highways.

Since the design depends mainly upon speed, and since speed is controlled by curvature, it is assumed that few, if any, of the vehicles will travel at speeds greater than the design speed of the curves. Speed checks indicate that the major portion of the vehicles travel at speeds not to exceed 0.7 of the design speed. To be on the safe side, the stopping sight distance both horizontal and vertical should be provided in accordance with the design speed of the curve when the section of road is on a curve. On tangents, the stopping sight distance on vertical curves should be provided for 70 miles per hour. Sections affording the required passing sight distance should be provided as frequently as feasibly possible. In the case of mountain summits, where the speed over a section is largely limited to 50 miles per hour due to the use of maximum curvature, studies should be made to use the shorter vertical curve providing safe stopping distance for the designed speed in question and to widen the roadbed over the summit to four lanes of pavement to afford safe passing, in contrast to a provision for a minimum of 1,200 feet vertical sight distance between approaching vehicles, which provides a passing sight distance inadequate to meet all conditions and which does not permit the free flow of traffic that the four-lane facility will afford. Cost studies of these alternates should be submitted by the Division Engineer to the Construction Engineer for his review and final instructions.

Each engineer responsible for location and design must familiarize himself with these instructions and follow them in all cases unless specifically authorized to violate them.

# SPEED CHART

SAFE SPEED FORMULA, $V = \sqrt{\frac{R(s+f)}{0.067}}$

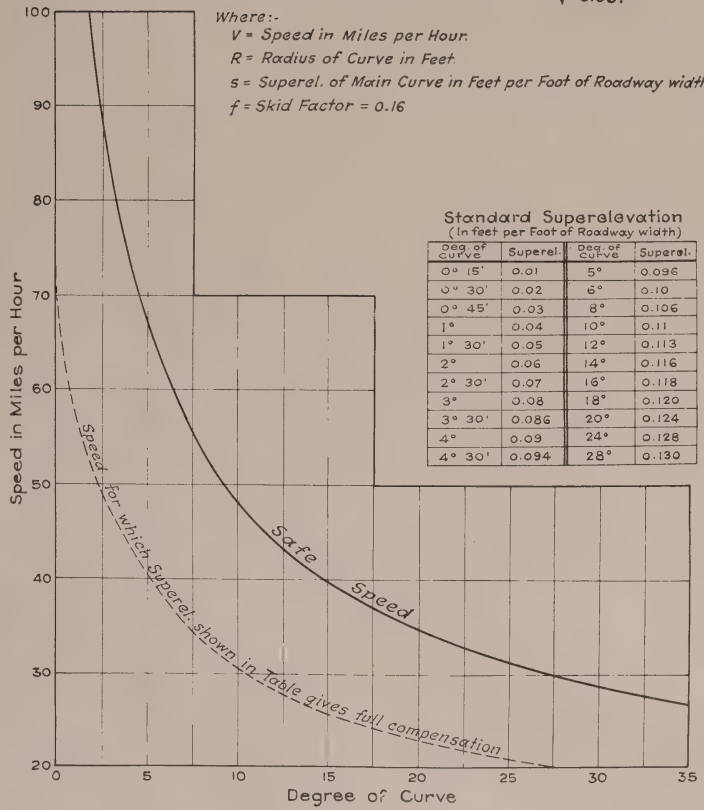
*Where:-*

*V = Speed in Miles per Hour.*

*R = Radius of Curve in Feet.*

*s = Superel. of Main Curve in Feet per Foot of Roadway width.*

*f = Skid Factor = 0.16*




Standard Superelevation
(In feet per Foot of Roadway width)

| Deg. of Curve | Superel. | Deg. of Curve | Superel. |
|---|---|---|---|
| 0° 15' | 0.01 | 5° | 0.096 |
| 0° 30' | 0.02 | 6° | 0.10 |
| 0° 45' | 0.03 | 8° | 0.106 |
| 1° | 0.04 | 10° | 0.11 |
| 1° 30' | 0.05 | 12° | 0.113 |
| 2° | 0.06 | 14° | 0.116 |
| 2° 30' | 0.07 | 16° | 0.118 |
| 3° | 0.08 | 18° | 0.120 |
| 3° 30' | 0.086 | 20° | 0.124 |
| 4° | 0.09 | 24° | 0.128 |
| 4° 30' | 0.094 | 28° | 0.130 |

Revised Aug., 1938

## TABLE Nº2
## HORIZONTAL SIGHT DISTANCE

Sight points established by line tangent to face of cut bank 4.5 feet above elevation of grade and distance measured along ℄ of Highway

| DESIGNED SPEED* M.P.H. | DEGREE OF CURVATURE | RADIUS OF CURVATURE FT. | AVAILABLE HORIZONTAL SIGHT DISTANCE (FT.)*** DISTANCE "m", FROM CENTER LINE OF HIGHWAY TO FACE OF CUT | | | | | | | | MIN. SIGHT DISTANCE REQUIRED FOR STOPPING FT. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 29.5 | 27.5 | 25.5 | 23.5 | 21.5 | 19.5 | 17.5 | 15.5 | |
| 70 | 2° | 2865 | 823 | 798 | 765 | 733 | 701 | 669 | 633 | 597 | 600** |
| 70 | 3° | 1910 | 673 | 650 | 625 | 600 | 573 2.0 | 547 4.0 | 517 6.0 | 487 8.0† | 600 |
| 70 | 4° | 1432.5 | 583 1.0 | 562 3.0 | 541 5.0 | 520 7.0 | 497 9.0 | 473 11.0 | 448 13.0 | 422 15.0 | 600 |
| 65 | 5° | 1146 | 521 2.0 | 503 4.0 | 484 6.0 | 465 8.0 | 445 10.0 | 423 12.0 | 401 14.0 | 377 16.0 | 545 |
| 60 | 6° | 955 | 476 | 459 2.0 | 442 4.0 | 424 6.0 | 406 8.0 | 387 10.0 | 366 12.0 | 341 14.0 | 475 |
| 55 | 7° | 818.6 | 441 | 426 | 410 2.0 | 394 4.0 | 377 6.0 | 358 8.0 | 339 10.0 | 320 12.0 | 425 |
| 55 | 8° | 716.2 | 413 2.0 | 398 4.0 | 383 6.0 | 368 8.0 | 352 10.0 | 335 12.0 | 317 14.0 | 299 16.0 | 425 |
| 50 | 9° | 637.7 | 389 | 376 | 363 | 347 | 332 2.0 | 316 4.0 | 299 6.0 | 282 8.0 | 350 |
| 50 | 10° | 573.0 | 368 | 356 | 344 1.0 | 330 3.0 | 315 5.0 | 300 7.0 | 284 9.0 | 267 11.0 | 350 |
| 45 | 12° | 477.5 | 336 | 325 | 314 1.0 | 303 3.0 | 288 5.0 | 274 7.0 | 259 9.0 | 245 11.0 | 320 |
| 40 | 14° | 409.3 | 313 | 302 | 290 | 278 | 266 2.0 | 254 4.0 | 240 6.0 | 226 8.0 | 275 |
| 35 | 16° | 358.6 | 292 | 282 | 272 | 261 | 249 | 237 | 225 2.0 | 211 4.0 | 235 |
| 35 | 18° | 318.3 | 276 | 267 | 257 | 246 | 235 | 224 2.0 | 212 4.0 | 200 6.0 | 235 |
| 35 | 20° | 286.5 | 262 | 253 | 244 | 234 | 223 2.0 | 213 4.0 | 201 6.0 | 189 8.0 | 235 |
| 30 | 24° | 238.8 | 240 | 231 | 223 | 214 | 204 | 194 1.0 | 184 3.0 | 173 5.0 | 200 |
| 25 | 28° | 204.7 | 223 | 215 | 206 | 198 | 189 | 180 | 171 | 160 | 150 |
| 20 | 56° | 102.4 | 159 | 153 | 147 | 141 | 135 | 128 | 121 | 114 | 115 |

*Based on Speed Formula: $V = \sqrt{\frac{R(e+f_1)}{0.067}}$

V = Speed in M.P.H.
e = Max. superelevation = 0.1 ft. per ft.
$f_1$ = Coef. of side skid friction = 0.16

Speed shown to nearest 5 M.P.H. No speed in excess of 70 M.P.H. considered.

**From Stopping Distance Formula:

$$S_h = \frac{V^2}{30(f_2 \pm G)} + 1.47\ PRT\ V = \frac{V^2+40V}{14}$$

$S_h$ = Sight distance reqd. for stopping, ft.
V = Designed speed in M.P.H.
$f_2$ = Coef. of straight skid friction varies uniformly from 0.5 at 70 miles to 0.40 at 30 miles per hour.
G = Grade expressed as fraction = -0.03
PRT = Perception reaction time varies uniformly from 2 sec. at 70 miles to 3 sec. at 30 mi. per hr.

***Sight distance based on formula: $S_h = \frac{200\cos^{-1}\frac{R-m}{R}}{D}$

$S_h$ = Available sight distance, ft.
R = Radius of curvature of Hwy. ℄, ft.
m = Offset (ft.) from ℄ Hwy. to face of 1:1 cut slope 4.5' above road surface
D = Degree of curve expressed in degrees
Arc $\cos\frac{R-m}{R}$ expressed in degrees

†Small figures show additional widening of cut necessary to make available sight distance equal distance required for stopping.

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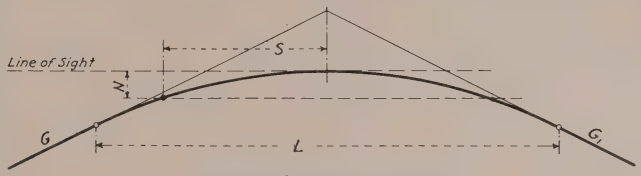
OREGON STATE HIGHWAY DEPARTMENT

# SIGHT DISTANCES ON VERTICAL CURVES

$G - G_1$ = Algebraic Difference in Grades.
$S$ = Sight Distance in stations.
$N$ = Height of Operators eyes above road surface (in feet).
$L$ = Length of Vertical Curve in Stations.




Where L is greater than S

$$S = \sqrt{\frac{2NL}{G-G_1}} \qquad L = \frac{S^2(G-G_1)}{2N} \qquad G-G_1 = \frac{2NL}{S^2}$$

Where L is less than S

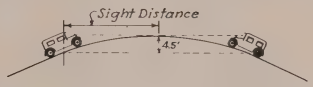
$$S = \frac{L}{2} + \frac{N}{G-G_1} \qquad L = 2S - \frac{N}{G-G_1} \qquad G-G_1 = \frac{N}{S-\frac{L}{2}}$$

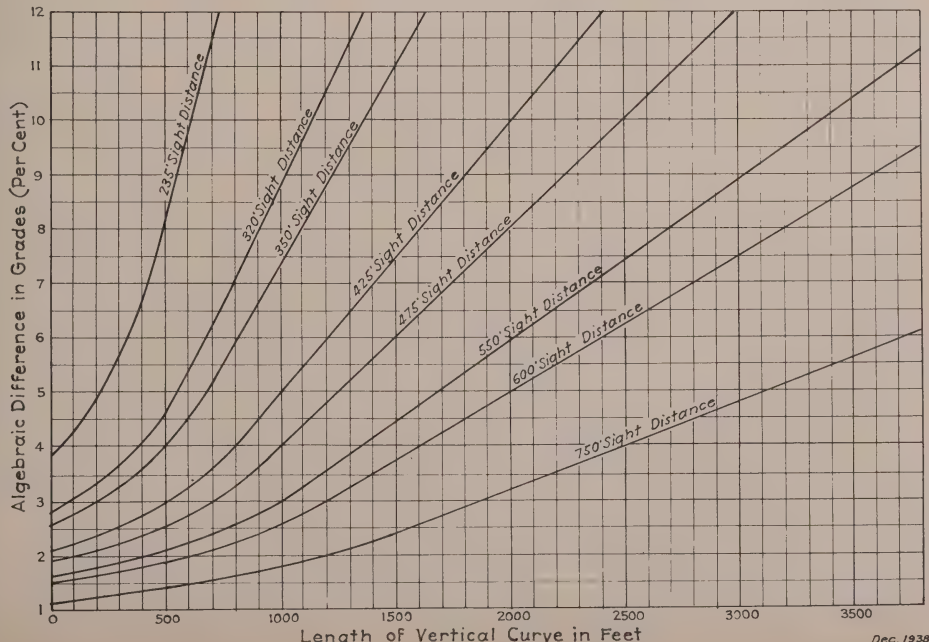
DRG. No. 1R-2-85

OREGON STATE HIGHWAY DEPARTMENT

# SIGHT DISTANCE ON VERTICAL CURVES

Vision Point assumed as being 4.5 Ft. above Road Surface




Dec. 1938

### Article 2—Spirals

All curves shall be spiraled, using the Talbot Spiral based on the arc definition for radius of curve. The standard length for spirals shall be as follows:

| Degree of Curve | Value of "a" | Length |
|---|---|---|
| 0°15′ | 0.1 | 250′ |
| 0°16′ to 0°29′ | 0.1 | *..... |
| 0°30′ | 0.2 | 250′ |
| 0°31′ to 0°59′ | 0.2 | |
| 1°00′ | 0.25 | 400′ |
| 1°01′ to 1°29′ | 0.25 | |
| 1°30′ | 0.4 | 375′ |
| 1°31′ to 1°59′ | 0.4 | |
| 2° | 0.5 | 400′ |
| 2°01′ to 2°59′ | 0.5 | |
| 3°00′ | 0.5 | 600′ |
| 3°01′ to 3°29′ | 0.6 | |
| 3°30′ | 0.7 | 500′ |
| 3°31′ to 3°59′ | 0.7 | |
| 4°00′ | 0.8 | 500′ |
| 4°01′ to 4°59′ | 0.8 | |
| 5°00′ | 1.0 | 500′ |
| 5°01′ to 5°59′ | 1.0 | |
| 6°00′ | 1 ⅓ | 450′ |
| 6°01′ to 6°59′ | 1 ⅓ | |
| 7°00′ | 1.75 | 400′ |
| 7°01′ to 7°59′ | 1.75 | |
| 8°00′ | 2.0 | 400′ |
| 8°01′ to 9°59′ | 2.0 | |
| 10°00′ | 2.5 | 400′ |
| 10°01′ to 11°59′ | 2.5 | |
| 12°00′ | 3.0 | 400′ |
| 12°01′ to 13°59′ | | |
| 14°00′ | 4.0 | 350′ |
| 14°01′ to 15°59′ | 4.0 | |
| 16°00′ | 5.0 | 320 |
| 16°01′ to 17°59′ | 5.0 | |
| 18°00′ | 6.0 | 300′ |
| 18°01′ to 19°59′ | 6.0 | |
| 20°00′ | 8.0 | 250′ |
| 20°01′ to 23°59′ | 8.0 | |
| 24° | 10.0 | 240′ |
| 24°01′ to 29°59′ | 10.0 | |
| 30°00′ | 15.0 | 200′ |
| 30°01′ to 35°59′ | 15.0 | |
| 36°00′ | 20.0 | 180′ |
| 36°01′ to 39°59′ | 20.0 | |
| 40° | 25.0 | 160′ |
| Above 40° | 25.0 | |

* Variable in proportion to degree.

Longer spirals than the above standard may be used at any time wherever advantage in their use is apparent, but shorter spirals may only be used in exceptional cases and by special authority.

Double spirals may not be used, and the minimum length of simple curve between spirals shall be 50 feet.

Compound curves should be avoided if possible, but in cases where they have been authorized spirals shall be used between the parts of the compound as well as on the end of the curve. The length of spiral between the parts of a compound curve shall not be less than in proportion to the standard length of spiral for the particular curves as the difference in the degree of the parts of the compound curve is to the degree of the sharper part of the compound.

### Article 3—Run-off

Run-off shall be calculated as a straight grade of the same length and coinciding with the spiral, with the ends being joined to the normal grade line by vertical curves one hundred feet long.

On curves turning in opposite directions and which are true reversing or are separated by tangents of four hundred feet or less, the run-offs of the two curves shall be combined in such a way that there will be no dip in the center line grade between the two curves. The run-offs shall run from the point of maximum superelevation on one curve to the profile grade at a point opposite the point of maximum superelevation on the other curve.

In special cases, such as intersections or at points of absolute control, special design may be worked out with the aid of a three-line profile. These standards may also be varied in cases where the curves do not meet our present standards for alignment, but only where absolutely necessary.

In the design of run-offs on pavements, the three-line profile shall be used in all cases as a check, and particular attention given to the effect produced by adjacent grade breaks in the normal profile.

### Article 4—Superelevations

Except as noted below, superelevation shall be obtained by raising the center and outside edge of the roadbed, and lowering the inside edge, holding at profile grade on two-lane roadways that line of the roadbed surface that is ten feet inside of the center line and on four-lane roadways twenty-two feet inside of the center line.

This rule will be subject to the following exceptions:

(a) On grades of four per cent or over, the profile grade shall be carried at the edge of the surfacing to the right of the center line ascending the grade and the superelevation obtained by raising the center and left side of the road-

way on curves turning to the right going up hill, and by lowering the center and left side of the roadway on curves turning to the left.

(b) On grade summits where the rate of grade is great enough to avoid adverse grades on the run-off, the superelevation shall be obtained by carrying the profile grade outside the center line and by lowering the center and inside of the curve.

In cases where less than 200 feet of main curve is left after spiraling, the superelevation along the main curve shall be determined by joining the run-offs in the center of the curve by a vertical curve of not less than 200 feet, nor more than enough to bring the superelevation to the maximum permitted for each particular curve.

(See Section 11, Article 11 (f) for superelevation on bridges.)

STANDARD SUPERELEVATIONS IN FEET FOR VARIOUS WIDTHS OF SURFACING OR ROADBED

| *Degree of Curve* | *Rate (Ft.) per Ft. of Width* | *Width of Roadbed in Feet* | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 56 | 58 | 60 |
| 0° to 0°22′ | 0.010 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 |
| 0°23′ to 0°37′ | 0.020 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.9 | 0.9 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 1.2 | 1.2 |
| 0°38′ to 0°52′ | 0.030 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.0 | 1.1 | 1.1 | 1.2 | 1.3 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | 1.6 | 1.7 | 1.7 | 1.8 |
| 0°53′ to 1°14′ | 0.040 | 0.7 | 0.8 | 0.9 | 1.0 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.2 | 2.3 | 2.4 |
| 1°15′ to 1°44′ | 0.050 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 |
| 1°45′ to 2°14′ | 0.060 | 1.1 | 1.2 | 1.3 | 1.4 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.4 | 3.5 | 3.6 |
| 2°15′ to 2°44′ | 0.070 | 1.3 | 1.4 | 1.5 | 1.7 | 1.8 | 2.0 | 2.1 | 2.2 | 2.4 | 2.5 | 2.7 | 2.8 | 2.9 | 3.1 | 3.2 | 3.4 | 3.5 | 3.6 | 3.8 | 3.9 | 4.1 | 4.2 |
| 2°45′ to 3°14′ | 0.080 | 1.4 | 1.6 | 1.8 | 1.9 | 2.1 | 2.2 | 2.4 | 2.6 | 2.7 | 2.9 | 3.0 | 3.2 | 3.4 | 3.5 | 3.7 | 3.8 | 4.0 | 4.2 | 4.3 | 4.5 | 4.6 | 4.8 |
| 3°15′ to 3°44′ | 0.086 | 1.5 | 1.7 | 1.9 | 2.1 | 2.2 | 2.4 | 2.6 | 2.8 | 2.9 | 3.1 | 3.3 | 3.4 | 3.6 | 3.8 | 4.0 | 4.1 | 4.3 | 4.5 | 4.6 | 4.8 | 5.0 | 5.2 |
| 3°45′ to 4°14′ | 0.090 | 1.6 | 1.8 | 2.0 | 2.2 | 2.3 | 2.5 | 2.7 | 2.9 | 3.1 | 3.2 | 3.4 | 3.6 | 3.8 | 4.0 | 4.1 | 4.3 | 4.5 | 4.7 | 4.9 | 5.0 | 5.2 | 5.4 |
| 4°15′ to 4°44′ | 0.094 | 1.7 | 1.9 | 2.1 | 2.3 | 2.4 | 2.6 | 2.8 | 3.0 | 3.2 | 3.4 | 3.6 | 3.8 | 3.9 | 4.1 | 4.3 | 4.5 | 4.7 | 4.9 | 5.1 | 5.3 | 5.5 | 5.6 |
| 4°45′ to 5°29′ | 0.096 | 1.7 | 1.9 | 2.1 | 2.3 | 2.5 | 2.7 | 2.9 | 3.1 | 3.3 | 3.5 | 3.6 | 3.8 | 4.0 | 4.2 | 4.4 | 4.6 | 4.8 | 5.0 | 5.2 | 5.4 | 5.6 | 5.8 |
| 5°30′ to 6°59′ | 0.100 | 1.8 | 2.0 | 2.2 | 2.4 | 2.6 | 2.8 | 3.0 | 3.2 | 3.4 | 3.6 | 3.8 | 4.0 | 4.2 | 4.4 | 4.6 | 4.8 | 5.0 | 5.2 | 5.4 | 5.6 | 5.8 | 6.0 |
| 7°00′ to 8°59′ | 0.106 | 1.9 | 2.1 | 2.3 | 2.5 | 2.8 | 3.0 | 3.2 | 3.4 | 3.6 | 3.8 | 4.0 | 4.2 | 4.5 | 4.7 | 4.9 | 5.1 | 5.3 | 5.5 | 5.7 | 5.9 | 6.1 | 6.4 |
| 9°00′ to 10°59′ | 0.110 | 2.0 | 2.2 | 2.4 | 2.6 | 2.9 | 3.1 | 3.3 | 3.5 | 3.7 | 4.0 | 4.2 | 4.4 | 4.6 | 4.8 | 5.1 | 5.3 | 5.5 | 5.7 | 5.9 | 6.2 | 6.4 | 6.6 |
| 11°00′ to 12°59′ | 0.113 | 2.0 | 2.3 | 2.5 | 2.7 | 2.9 | 3.2 | 3.4 | 3.6 | 3.8 | 4.1 | 4.3 | 4.5 | 4.7 | 5.0 | 5.2 | 5.4 | 5.6 | 5.9 | 6.1 | 6.3 | 6.6 | 6.8 |
| 13°00′ to 15°59′ | 0.116 | 2.1 | 2.3 | 2.6 | 2.8 | 3.0 | 3.2 | 3.5 | 3.7 | 3.9 | 4.2 | 4.4 | 4.6 | 4.9 | 5.1 | 5.3 | 5.6 | 5.8 | 6.0 | 6.3 | 6.5 | 6.7 | 7.0 |
| 16°00′ to 19°59′ | 0.120 | 2.2 | 2.4 | 2.6 | 2.9 | 3.1 | 3.4 | 3.6 | 3.8 | 4.1 | 4.3 | 4.6 | 4.8 | 5.0 | 5.3 | 5.5 | 5.8 | 6.0 | 6.2 | 6.5 | 6.7 | 7.0 | 7.2 |
| 20°00′ to 23°59′ | 0.124 | 2.2 | 2.5 | 2.7 | 3.0 | 3.2 | 3.5 | 3.7 | 4.0 | 4.2 | 4.5 | 4.7 | 5.0 | 5.2 | 5.5 | 5.7 | 6.0 | 6.2 | 6.4 | 6.7 | 6.9 | 7.2 | 7.4 |
| 24°00′ to 27°59′ | 0.128 | 2.3 | 2.6 | 2.8 | 3.1 | 3.3 | 3.6 | 3.8 | 4.1 | 4.4 | 4.6 | 4.9 | 5.1 | 5.4 | 5.6 | 5.9 | 6.1 | 6.4 | 6.7 | 6.9 | 7.2 | 7.4 | 7.7 |
| 28°00′ Up | 0.130 | 2.3 | 2.6 | 2.9 | 3.1 | 3.4 | 3.6 | 3.9 | 4.2 | 4.4 | 4.7 | 4.9 | 5.2 | 5.5 | 5.7 | 6.0 | 6.2 | 6.5 | 6.8 | 7.0 | 7.3 | 7.5 | 7.8 |

## Article 5—Retaining Walls

Our standard plans for retaining walls are intended only as a rough indication of the quantities which are ordinarily necessary and should only be used for approximate estimates. Retaining wall design is affected by surface conditions, drainage conditions, character of backfill, etc., and each individual location merits individual study.

Resident Engineers shall submit complete vicinity maps for each wall contemplated.

No wall shall be constructed except upon approved design by the bridge department and arrangement will be made by that department for usual inspection during construction.

## Article 6—Footpaths to be Built Near Congested Districts

It is suggested that wherever feasible footpaths be included on all projects in the vicinity of towns, schools or thickly settled communities. These paths should be treated as a part of the highway location. Therefore, Location Engineers will show a definite location and design for footpaths on the location maps and profile. One path will be considered standard, but two may be used in close proximity to towns. The pathway should be four feet wide with a wearing surface of crushed rock and gravel. It is advisable to first place a lower course of 1¼" to ¾" rock of 2-inch depth, with a top course of ¼"–0" rock of 1-inch in thickness.

Paths if possible should be distinctly separate from the highway grade to give safety to the pedestrians. Straight lines should be avoided in order that the paths blend in with the roadside shrubbery. It is unnecessary to use a uniform grade line as paths can follow closely the ground contour over moderately rolling ground. Where the cuts and fills are very high it will be necessary to carry the path along the shoulder.

## Article 7—Oil Mat Surface Treatment and Bituminous Macadam

The chart *"Table of Details"* for Oil Mat Surface Treatment and Bituminous Macadam and the table of "Calculation Data for Preparing Surfacing, Oiling and Paving Estimates on Normal Projects" shall be used for estimating purposes.

## CALCULATION DATA FOR PREPARING SURFACING, OILING AND PAVING ESTIMATES ON NORMAL PROJECTS

| *Item* | *Unit* | *Calculated Quantity* | *Compaction Allowance* | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *Rock* | | | | | | | | | | |
| Uncrushed rock or gravel | C.Y. | X-Sec. Vol. | + 20% | Equals | Summary | Net | + 10% | Equals | Summary | Gross |
| Crushed rock or gravel | " | X-Sec. Vol. | + 25% | " | " | " | + 10% | " | " | " |
| Coarse Rock (Keyed Base) | " | X-Sec. Vol. | + 5% | " | " | " | + 10% | " | " | " |
| Key Rock (Keyed Base) | " | ½ X-Sec. Vol. of Coarse Rock | + 15% | " | " | " | + 10% | " | " | " |
| *Sprinkling* | | | | | | | | | | |
| a. Uncrushed material | M Gal. | .020 per C. Y. | | Equals | Summary | Net | + 10% | Equals | Summary | Gross |
| b. Crushed material | " | .025 per C. Y. | | " | " | " | + 10% | " | " | " |
| c. Keyed rock base | " | .030 per C. Y. | | " | " | " | + 10% | " | " | " |
| *Mineral Aggregate* | C.Y. | *Table Value | | " | " | " | + 5% | " | " | " |
| *Bituminous Cement* | Ton | " " | | " | " | " | + 10% | " | " | " |
| *Asphaltic Concrete* | | | | | | | | | | |
| Class "A" and "B" | Ton | .00608 per Sq. Ft. (1" Thick) | | " | " | " | + 10% | " | " | " |
| Class "C" | Ton | .00541 per Sq. Ft. (1" Thick) | | " | " | " | + 5% | " | " | " |
| †*Emuls. Asphalt in Seal Coat* | Ton | .000833 per Sq. Yd. | | " | " | " | + 10% | " | " | " |
| †*Fine Aggregate in Seal Coat* | Ton | .003755 per Sq. Yd. | | " | " | " | + 10% | " | " | " |
| *Road Mix (Approx.)* | | | | | | | | | | |
| Total Aggregate | C. Y. | X-Sec. Vol. | + 40% | " | " | " | + 10% | " | " | " |
| Total Bit. Cem. (RC–# ) | Ton | 5% of Summary Net Aggregate | + 35% | " | " | " | + 10% | " | " | " |
| *Portland Cem. Con. Pave.* | S. Y. | Calculated Area | | " | " | " | + 2% | " | " | " |
| Cushion Course (½"–0") | C. Y. | 1" Thick (Loose) | | " | " | " | + 5% | " | " | " |

* Table value from Standard Table of Details for Oil Mats, etc.

† Use Only on "B" mix wearing surface.

OREGON STATE HIGHWAY DEPARTMENT

# TABLE of DETAILS

## OIL MAT and BITUMINOUS MACADAM WEARING SURFACES

20 FOOT WIDTH

| TYPE | | 0-30 | | | 0-9 | | | 0-11 | | | B-2 | | | B-3 | | | B-11 | | | Footpath (W=5') | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THICKNESS | | 3/8" | | | 3/4" | | | 1 1/4" | | | 2" | | | 2 1/2" | | | 3" | | | 2 1/3" | | |
| BIT. CEM. | Main & 1st. Seal | SC-6 | | | 151-200 Asphalt | | | 151-200 Asphalt | | | 151-200 Asphalt | | | 151-200 Asphalt | | | 121-150 Asphalt | | | SC-6 | | |
| | 2nd. Seal Coat | — | | | RC-3 or Emuls. | | | RC-3 or Emuls. | | | RC-3 or Emuls. | | | RC-3 or Emuls. | | | RC-3 or Emuls. | | | — | | |
| | | Size | Per Sq. Yd. | Per Mile | Size | Per Sq. Yd. | Per Mile | Size | Per Sq. Yd. | Per Mile | Size | Per Sq. Yd. | Per Mile | Size | Per Sq. Yd. | Per Mile | Size | Per Sq. Yd. | Per Mile | Size | Per Sq. Yd. | Per Mile |
| 1ST. SPREAD | Bit. Cement | | .325 | 14.17 | | .20 | 8.79 | | .20 | 8.79 | | .20 | 8.79 | | .20 | 8.79 | | | | | .30 | 3.27 |
| | Aggregate | 3/4"-1/2" 1/2"-1/4" 1/4"-0" | .008 .004 .003 | 94 47 35 | 3/4"-1/2" | .013 | 153 | 1 1/4"-3/4" | .022 | 259 | 1 1/2"-3/4" | .024 | 282 | 1 1/2"-3/4" | .024 | 282 | 2 1/2"-1 1/4" | .060 | 704 | 1/2"-1/4" | .015 | 44 |
| 2ND. SPREAD | Bit. Cement | | | | | | | | .375 | 16.48 | | .37 | 16.26 | | .37 | 16.26 | | 1.00 | 43.95 | | .20 | 2.18 |
| | Aggregate | | | | | | | 3/8"-1/2" 1/2"-1/4" | .009 .003 | 106 35 | 1 1/2"-3/4" | .021 | 246 | 1 1/2"-3/4" | .021 | 246 | 1 1/4"-3/4" | .020 | 235 | 1/4"-0" | .01 | 29 |
| 3RD. SPREAD | Bit. Cement | | | | | | | | | | | .375 | 16.48 | | .37 | 16.26 | | .375 | 16.48 | | | |
| | Aggregate | | | | | | | | | | 3/8"-1/2" 1/2"-1/4" | .009 .003 | 106 35 | 1 1/2"-3/4" | .021 | 246 | 3/8"-1/2" 1/2"-1/4" | .009 .003 | 106 35 | | | |
| 4TH. SPREAD | Bit. Cement | | | | | | | | | | | | | | .375 | 16.48 | | | | | | |
| | Aggregate | | | | | | | | | | | | | 3/8"-1/2" 1/2"-1/4" | .009 .003 | 106 35 | | | | | | |
| 1ST. SEAL | Bit. Cement | | | | | .25 | 10.99 | | .325* .375 | 14.28 16.48 | | .325* .375 | 14.28 16.48 | | .325* .375 | 14.28 *16.48 | | .325* .375 | 14.28 16.48 | | | |
| | Aggregate | | | | 1/2"-1/4" 1/4"-0" | .006 .003 | 70 35 | 1/2"-1/4" 1/4"-0" | .006 .003 | 70 35 | 1/2"-1/4" 1/4"-0" | .006 .003 | 70 35 | 1/2"-1/4" 1/4"-0" | .006 .003 | 70 35 | 1/2"-1/4" 1/4"-0" | .006 .003 | 70 35 | | | |
| 2ND. SEAL | RC-3 or Emuls. | | | | | .25 | 11.33† | | .25 | 11.33† | | .25 | 11.33† | | .25 | 11.33† | | .25 | 11.33† | | | |
| | Aggregate | | | | 1/2"-1/4" 1/4"-0" | .006 .004 | 70 47 | 1/2"-1/4" 1/4"-0" | .006 .004 | 70 47 | 1/2"-1/4" 1/4"-0" | .006 .004 | 70 47 | 1/2"-1/4" 1/4"-0" | .006 .004 | 70 47 | 1/2"-1/4" 1/4"-0" | .006 .004 | 70 47 | | | |
| Total Bit. Cement | | | .325 | 14.17 | | .45 | 19.78 | | .90* .95 | 39.55 41.75 | | 1.27* 1.32 | 55.81 58.01 | | 1.64* 1.69 | 72.07 74.27 | | 1.70* 1.75 | 74.71 76.91 | | .50 | 5.45 |
| Total RC-3 or Emuls. | | | | | | .25 | 11.33† | | .25 | 11.33† | | .25 | 11.33† | | .25 | 11.33† | | .25 | 11.33† | | | |
| Aggregate | | 3/4"-1/2" 1/2"-1/4" 1/4"-0" | .008 .004 .003 | 94 47 35 | 3/8"-1/2" 1/2"-1/4" 1/4"-0" | .013 .012 .007 | 153 140 82 | 1 1/4"-3/4" 3/4"-1/2" 1/2"-1/4" 1/4"-0" | .022 .009 .015 .007 | 259 106 175 82 | 1 1/2"-3/4" 3/8"-1/2" 1/2"-1/4" 1/4"-0" | .045 .009 .015 .007 | 528 106 175 82 | 1 1/2"-3/4" 3/8"-1/2" 1/2"-1/4" 1/8"-0" | .066 .009 .015 .007 | 774 106 175 82 | 2 1/2"-1 1/2" 1 1/4"-3/4" 3/8"-1/2" 1/2"-1/4" 1/2"-0" | .060 .020 .009 .015 .007 | 704 235 106 175 82 | 1/2"-1/4" 1/4"-0" | .015 .010 | 44 29 |
| Total Aggregate | | | .015 | 176 | | .032 | 375 | | .053 | 622 | | .076 | 891 | | .097 | 1137 | | .111 | 1302 | | .025 | 73 |
| Gals. per Cu. Yd. (60° F.) | | 19.24 | | | 19.90 | | | 19.53* 20.37 | | | 17.96* 18.55 | | | 17.46* 17.92 | | | 15.73* 16.13 | | | 17.84 | | |

*Quantities of bituminous cements are given in gallons per sq. yd. at mean application tempatures and in tons per mile.*

*Quantities of aggregates are given in cu. yds. per sq. yd. and in cu. yds. per mile. Add 10% to bit. cement quantities and 5% to aggregate quantities for estimating purposes.*

** Use the lesser quantities in the eastern and southern portions of the state and the greater quantities along the coast and in the northwest portion of the state.*

*† Quantities shown are for RC-3. Add 0.89 for Emulsion.*

November, 1941

### BASIC DATA for BIT. CEMENTS

| Type of Bit. Cem. | Gals./Ton @60°F. | Gals./Ton @mean Applic. Temp. |
|---|---|---|
| SC-1 | 251 | 260 |
| SC-2 | 248 | 263 |
| SC-3 | 245 | 262 |
| SC-4 | 243 | 262 |
| SC-5 | 241 | 264 |
| SC-6 | 239 | 269 |
| | | |
| RC-1 | 251 | 262 |
| RC-2 | 248 | 260 |
| RC-3 | 245 | 259 |
| RC-4 | 243 | 259 |
| | | |
| 40-100 | 235 | 264 |
| 100-210 | 237 | 266 |
| | | |
| Emuls. | 240 | 240 |
| | | |

## SECTION 11. MAPS AND PROFILES

*Article*

1. Titles to be Placed on all Records.
2. Maps and Profiles to be Separate.
3. Maps and Profiles to be From Left to Right.
4. Plat Maps by Coordinates.
5. Tracings.
6. 100-Foot Detail Map.
7. 400-Foot Detail Map.
8. 1,000-Foot Map.
9. Show Information Obtained from Plats, Etc., in Parentheses.
10. Vicinity Map of Railroad Crossing for Public Utilities Commission.
11. Vicinity Map for Design Purposes.
12. Profiles.
13. Profile Summary.
14. Show Data to Retrace Line.
15. Show Quantities to Construct Drainage System.
16. Construction Map.

### Article 1—Titles to be Placed on All Records

The main title on roll maps and profiles shall be placed on the left end of the roll. On single sheet maps, etc., the title shall be placed on the lower right-hand corner.

All maps, profiles and other data submitted shall have complete sub-titles of the following sample form:

Pacific Highway—Douglas County
Oakland-Wilbur Section
Station 300-345
Located $L^2$ Line
Length of Section 0.85 Miles

Locating Engineer March 30, 1938

On records submitted in rolls this title shall be placed on each end of the roll on the outside, and on tracings an additional title shall be placed on the inside in such a manner that when prints are made they can be identified.

### Article 2—Maps and Profiles to be Separate

Combination sheets showing map above and profile below shall *not* be used for preliminary or location surveys.

No map or profile shall be made over 320 inches long.

### Article 3—Maps and Profiles to be from Left to Right

All maps and profiles shall be laid out from left to right.

Stationing should run from north to south or from west to east.

### Article 4—Plat Maps by Coordinates

All maps shall be platted by coordinates and the latitude and departure of each coordinate point shall be inked on the map. Coordinates shall be computed on Form E-38 and must be turned in with the other records at the completion or suspension of the survey.

The Lambert System of Plane Coordinates shall be used whenever ties can conveniently be made to permanent monuments whose positions are known. (See "Lambert System of Plane Coordinates", Sec. 5, Art. 13.)

### Article 5—Tracings

Tracings to be made in the field shall be as follows:

(a) All profiles (10 x 10 cloth).
(b) Vicinity and small maps (Federal aid sheets or plain sheets).
(c) Tracings ordered by the Division Engineer or the Construction Engineer.

### Article 6—100-Foot Detail Map

The 100-foot detail map will be prepared by the Resident Engineer's forces on buff-colored detail paper, twenty-one inches wide unless otherwise ordered by the Division Engineer or the Construction Engineer.

This map shall be prepared in accordance with the following:

(a) The preliminary line shall be shown in red.
(b) Any projected lines shall be lightly penciled in.
(c) Located lines shall be shown in black. (If more than one line is located, they may be shown in different colors other than red or that used for contours.)
(d) All water features shall be shown in blue.
(e) Contours and their elevations shall be shown in yellow for the five-foot intervals and in orange ink for the twenty-five-foot intervals.
(f) Buildings, fence lines, section lines, roads, pole lines, etc. shall be shown in black.
(g) All section lines, quarter lines, property lines, sub-division lines, creeks, rivers, lakes, springs, existing roads, railroads, canals, irrigation ditches and structures, pole lines, fences, orchards, gardens, cultivated lands, pastures and land of other kinds, and buildings shall be shown. In short, everything which may have any bearing on the location and construction of the road shall be shown. (See Sec. 5, Art. 15, for Sec. Ties.)

(h) The stationing shall be shown on all curve points. All bearings and curve data shall be shown.
(i) Show coordinates of all "P" Line angle points, all P. I.'s on "L" Lines and of all section corners, permanent monuments, etc.
(j) Mile posts shall be shown on all lines.
(k) The ownership of all property abutting on or adjacent to the survey shall be shown.
(l) All ties must be shown and corners that are tied should be marked "found". (See Sec. 5, Art. 15.)
(m) Show station of intersection with old roads and equation of stationing.
(n) Show complete information regarding all parts of the old right of way which is to be retained and which is not within the regular right of way lines. These parcels shall be accurately tied to the centerline of the new location and the same datum used as on the new location so that by reestablishing the revised centerline, the retained sections of the old right of way may be accurately relocated. (See under "Abandonments", Sec. 9, Art. 18.)
(o) Indicate proposed bridges, culverts, etc.

### Article 7—400-Foot Detail Map

This map is to be made only when requested by the Construction Engineer. The purpose of this map is to obtain the relationship between various lines, with reference to local physical features of the country. All streams, buildings of importance, landmarks, section lines and corners, towns, etc., should be shown.

This map, if required, shall be made on hard copy detail paper.

Contours shall not be shown on this map. The elevation of summits may be shown.

### Article 8—1,000-Foot Map

This map and a tracing of it shall be kept up to date by the field office as the survey progresses. It shall show all lines run and all major topographic features of the country traversed. This should include topographic features taken from other maps so that it may cover a considerably larger extent of the country than that immediately adjacent to the survey. Mountains, cliffs, etc., may be shown by hatching.

### Article 9—Show Information Obtained from Plates, Etc., in Parentheses

All ties, etc., obtained from sources other than actual field work are to be shown enclosed in parentheses. Where there is a difference between the field and deed or plat records, both should be shown—the field work in the regular manner and the deed or plat data in parentheses.

### Article 10—Vicinity Maps of Railroad Crossings for Public Utilities Commission

Vicinity maps and profiles shall be made at the time of the survey of all grade crossings and separations in accordance with the following instructions. This map is intended for the Public Utilities Commission only and is not to be confused with the vicinity map to be used in the design of the proposed structure.

(a) *Vicinity Maps for Public Utilities Commission*—A vicinity map showing the vicinity near the crossing for a distance of at least 1,500 feet each side of the crossing, along both the highway and the railroad. The scale shall not be smaller than 1″ = 200 feet and shall be made up on the standard 22″ x 34″ tracing cloth sheets. We believe that in most cases, except where the angle of crossing is nearly 90 degrees, that the map and profile can be made up on the standard federal aid sheet such as is used in making up our vicinity maps and profiles for the Bridge Department. Where the standard sheet cannot be used the map is to be made up on a plain sheet of the same size (22″ x 34″), and the profile may or may not be placed on the same sheet. In *no* case shall the size of the sheet for the map and/or profile be other than multiples of a standard letter size sheet (8½″ x 11″).

The following data shall be shown:

(1) Stationing of the railroad line or lines and the station at the intersection of highway.
(2) Stationing of the highway and the station at the intersection of track or tracks.
(3) The angle of intersection of the railway and highway. In case the intersection is on a curve or curves, the angle of the intersection of a tangent to the curves at the point of intersection shall be given.
(4) The right of way line of both the highway and the railway.
(5) The location of all farm, private or gated crossings within the limits of the map.
(6) The location of all telephone, telegraph and power lines, both along the highway and the railroad.
(7) The location of all buildings, trees, houses, barns and other obstructions to view within a radius of 600 feet of the intersection of the highway and the railway.
(8) The location of all block signals, whistle posts, crossing signs, approach signs or other signal devices or warnings in place on either the highway or the railway.
(9) The location of contour lines within a radius of 600 feet of the crossing. Contour interval 5 feet.

(10) By appropriate lines, the distances which the operator of a highway vehicle can see in either direction along the railway and discern the pilot of a locomotive from:

Points 50 feet each side of the intersection.

Points 500 feet each side of the intersection.

(b) *Profiles for Public Utilities Commission* —A profile showing the grade of the highway and of the railroad for a distance of at least 1,500 feet on each side of the crossing intersection shall be made; it may or may not be on the same sheet as the map. The scale shall be such as to clearly show the required information.

### Article 11—Vicinity Map for Design Purposes

A vicinity map shall be prepared for each proposed structure. The sample standard vicinity map, which is a part of this manual, is to be studied in preparing vicinity maps.

The following data shall be shown in the manner described:

(a) A scale of 50 feet to the inch is desired, but this may be altered in order that all information may be contained on the standard size sheet.

(b) All vicinity maps shall be prepared on standard 22″ x 34″ tracing cloth sheets.

(c) Contours shall be shown at two-foot intervals, unless the country is of such nature as to crowd the drawing too much, in which case an interval of five feet may be used.

(d) Contours and their elevations shall be shown in yellow for the two or five-foot intervals and in orange for the ten or twenty-five-foot intervals, depending upon the contour interval used.

All information pertaining to grade lines shall be shown in red.

All streams, channels, etc. shall be shown in blue.

The toe of fills or top of cutbanks shall be shown with a broken line made with a soft pencil.

The alignment, buildings, character of terrain, notes, pole lines, pipe lines, ditches, etc. shall be shown in black.

(e) A three-line profile shall be shown for each proposed structure. These profiles shall be taken on the located centerline and at fifteen feet each side of centerline. All breaks in the ground surface shall be shown.

(f) Clearly indicate whether the grade lines shown are for finish grade or subgrade. In this respect it is well to indicate the depth of surfacing to be used (or other form of construction to be employed in carrying traffic).

When a bridge is entirely on a horizontal curve, requiring superelevation, the grade line should be carried on the inside of the curve. When only a portion of the bridge is on a curve, the grade line should be carried on the outside of the curve, which results in lowering the curb on the inside of the curve.

(g) The proposed structure shall be indicated in soft pencil on the plan and profile. This shall include the station of the beginning and end of the structure and the location of the proposed footings and span lengths.

(h) A small scale vicinity map shall be shown on the map and profile sheet. This map should include enough information to clearly indicate the position of the proposed structure in relation to the surrounding country, as the distance to the nearest town, direction of flow of streams, etc.

(i) On railroad crossings be sure to indicate the elevation of the top of rails and top of ties at the points of intersection.

On streams the elevation of high and low water shall be shown, together with the dates on which the recordings were made (if possible).

A profile shall be shown for railroads, streambeds and crossing roads. These shall be for such length as to give complete information for purposes of designing the structure. For railroads this distance shall be about five hundred feet each side of the crossing, and for streams a distance of about 1,000 feet upstream and 400 feet downstream.

(j) Subsurface indications shall be shown on the vicinity map. (See under "Soils", Sec. 12.)

(k) A report shall be prepared in full on "Bridge Construction Survey Data", Form No. 61, for each vicinity map prepared. Under Item 8, "Other Material Data", give the relative costs of embankment and rock for riprap.

(l) Give complete information on the existing structure if there is one.

(m) Give complete information as to the location of all water mains, sewer, gas, pole or power lines, etc.

(n) For bridges over navigable waters, the following information is required:

(1) Soundings one mile each side of the proposed structure.

(2) The Government datum plane used.

(3) Location of section corner.

(4) Direction of ebb and flow of tide at site and at one mile limit each way from the bridge.

(5) Elevation of mean low and mean high tides.

(6) Extreme high water if bridge is across tidal waters; if across non-tidal waters, extreme high water,

ordinary boating water and low water.
(7) Highest elevation at which water has remained for five consecutive days.
(8) Show harbor lines if they have been established.
(9) The channel which is used for navigation should be indicated.
(10) If there is an existing structure, a sketch should be furnished showing type, span lengths and vertical and horizontal clearances provided for traffic.

**Article 12—Profiles**

(a) All profiles shall have the main title on the left end of the roll. A sub-title shall be carried on the outside of each end of the roll. (See Section 11, Article 1.)

(b) The typical section shall be shown on the left end of every profile.

(c) Profiles, both location and construction, shall be platted on 10 x 10 cross section cloth.

(d) The scale shall be 100 feet to the inch horizontally and 10 feet to the inch vertically, except in extremely heavy work when the vertical scale may be increased to 20 feet to the inch.

(e) The following data shall be shown on each profile. Grade lines and data pertaining thereto shall be shown in red ink; all other items will be shown in black ink.

(1) Ground line.
(2) Grade line. (Include the elevation and station of grade intersections and the length of verticle curves.) On grading projects the grade line shown shall be subgrade and will be so marked. Indicate on all profiles whether the grade line shown is subgrade or finished grade.
(3) The station of all curve points.
(4) Degree of curve, total central grade, length of semi-tangent, length of spiral, spiral angle and "a" value.
(5) Bearings of tangents.
(6) Equations.
(7) Mile posts.
(8) Reference points.
(9) Bench mark locations.
(10) Names of streams and direction of flow.
(11) Towns and villages.
(12) The elevation and station of all intersecting streets, roads and railroads.
(13) The station, kind, size and length of existing culverts and siphons. Show whether they are to be removed, replaced, salvaged or lengthened. If replaced, give size, kind and length of new culvert or siphon. If salvaged, give disposition. If lengthened, give the end or ends to be lengthened as well as the kind, size and length for each end. Show trench and structural excavation for culverts, siphons, irrigation and drainage ditches, etc.
(14) Show station of each end, width and other necessary information to describe bridges, stock passes, undercrossings, etc. Show station of each end and dimensions of proposed new structures.
(15) Show distribution and haul of earthwork quantities on all profiles. Miscellaneous quantities such as borrow, channel changes, etc. shall be designated as such.
(16) The location, depth and findings of all test pits and tunnels.
(17) Show the equation in stationing at the intersection of old roads.

**Article 13—Profile Summary**

All quantities entered in the summary at the right hand of the profile shall be in soft pencil. All items anticipated in the construction of the project should be included on location profiles. On final construction profiles every bid item shall be listed and all items of "extra work" shall be shown separately.

**Article 14—Show Data to Retrace Line on Location and Construction Maps and Profiles**

In the preparation of the location and final construction records, it is of the utmost importance that the maps and profiles show all information necessary to reestablish line and grade at any future time. Therefore, all references to the line, permanent monuments and bench marks must be clearly shown before maps and profiles will be considered completed.

**Article 15—Show Quantities Necessary to Construct Drainage System**

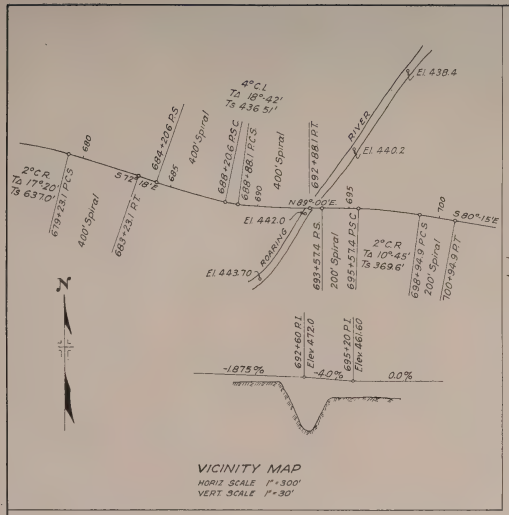
All items and quantities necessary to the construction of drainage structures shall be shown on location and construction profiles. This shall include structural excavation quantities, type of structure or culvert, concrete and metal reinforcement (for box culverts), trench excavation quantities for inlet and outlet ditches, etc.

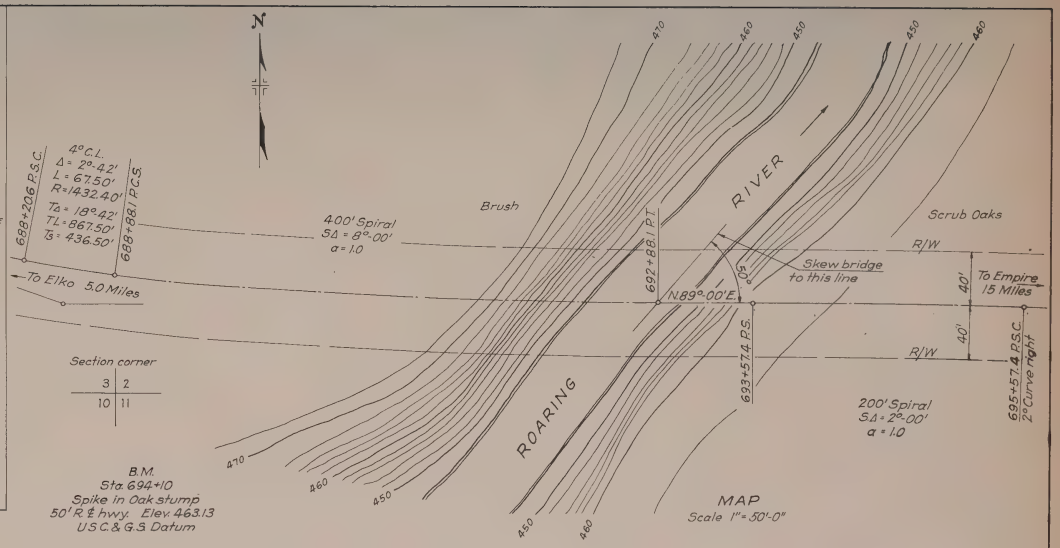
**Article 16—Construction Map**

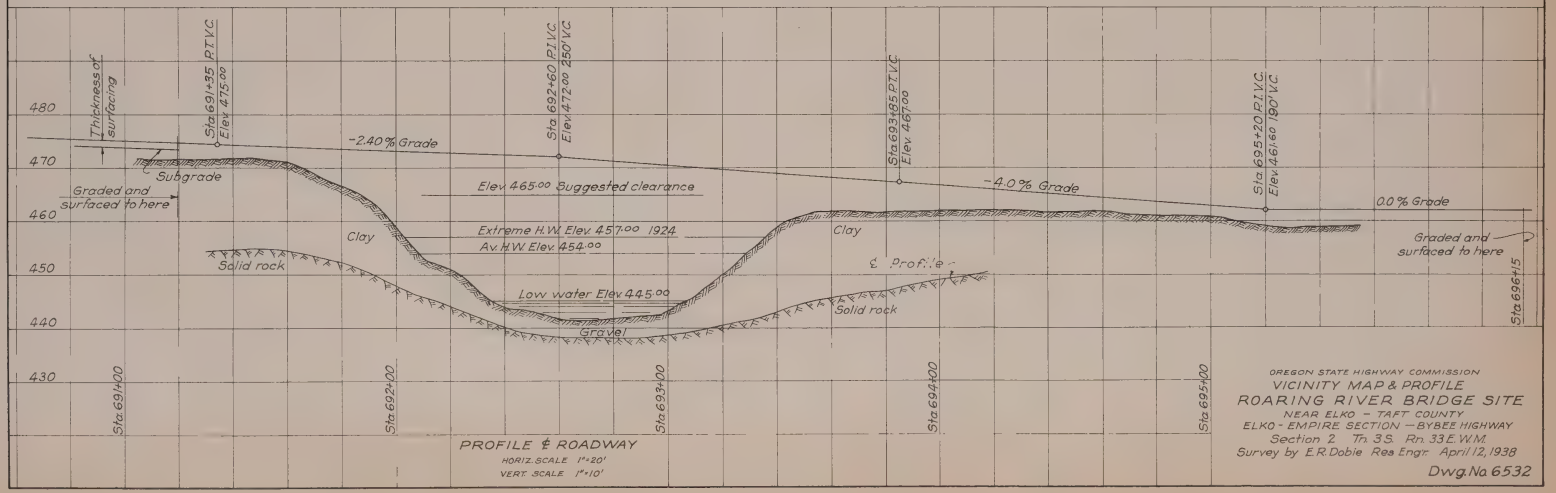
At the completion of a construction project the location detail map shall be revised to show the road as constructed, with all changes made in construction or changes in culture made since the location map was prepared. All culverts, permanent monuments or right of way markers shall be clearly shown.

If no location detail map is available a new construction map will be prepared in the same manner as a location detail map but with omission of contour lines, preliminary and projected lines.

Sections of old right of way to be retained must be clearly shown.




OREGON STATE HIGHWAY COMMISSION

# VICINITY MAP & PROFILE
# ROARING RIVER BRIDGE SITE

NEAR ELKO – TAFT COUNTY
ELKO – EMPIRE SECTION – BYBEE HIGHWAY
Section 2 Tn. 38 Rn. 33 E. W.M.
Survey by E.R. Dobie Res Engr. April 12, 1938

Dwg. No. 6532

(SAMPLE COPY)

Form 61.

OREGON STATE HIGHWAY COMMISSION

# BRIDGE CONSTRUCTION—SURVEY DATA

For bridge over Sandy River Bridge No.

Located (Distance) miles (Direction) from at Troutdale (Nearest R. R. Station) in section 25 (or between sections ), twp. 1 N., range 3 E.

County of Multnomah Name and number of road Columbia River Highway

Local name of bridge Sandy River Date of report Feb. 16, 1939 Report by Kirkwood (Engineer)

## (A) MATERIALS SURVEY

| MATERIAL | Source of Supply | Haul to Site (Distance and Character of Road) | Estimated Cost (F. O. B. Site) |
|---|---|---|---|
| (1) Cement | Portland | 15 mi. OK | |
| (2) Fine aggregate | Troutdale | 0 | |
| (3) Gravel for coarse aggregate | Portland | 15 mi. OK | |
| (4) Crushed stone for coarse aggregate | " | " | |
| (5) Structural timber | " | " | |
| (6) Falsework timber | " | " | |
| (7) Piling | | | |

(8) Other materials data The rock (500 feet east of the bridge site) could be crushed and washed for concrete.

## (B) WATERWAY SURVEY

(1) Location and elevation of bench mark and datum used S. W. pier of R.R. bridge. Brass plate Elev. 47.81

(2) Drainage area in acres 335,000 Character of watershed Mountainous

(3) Width, depth and cross-section of stream: (1) of flood stage 42 in 1894, and 33 in 1933
(Show by sketches if necessary) (2) at low water stage 17
(3) at ordinary stage 20

(4) Elevations (a) Lowest point in stream bed at bridge site 14 (b) Highest water 42
(c) Lowest water 17 (d) Highest ice (e) Highest drift

(5) Frequency and duration of floods In June back water from Col. Riv. Season of year Fall & Winter

(6) Extent of drainage to be feared from ice or drift

(7) Will all flood water pass through new structure or will relief be afforded through highwater channels or over approach fills? (Illustrate by sketch) Will all pass through new structure.

(8) Is stream in general cutting or silting up and at what rate? Drifting sand

(9) Is there any tendency for stream to shift laterally or to change its channel? No change except drifting sand within the main channel

(10) Is there need of any of the following work in connection with construction of new bridge?
(a) Channel changes No. Except Beaver Creek
(b) Enlargement or clearing of channel to afford more waterway No
(c) Bank protection, revetments, wingdams, etc. No
(Illustrate by sketches)

(Back of form 61)

(11) Location of nearest existing structure over same waterway 400 feet north to O.W.R.R.&N. Co. give following data for this structure:
(a) Number and length of spans and approaches 3 - 150' thru rivited spans, 1 - 60' Girder
(b) Waterway area produced by old structure 11,250 sq. ft.
(c) Is this area too small? No Is it too large? No
(d) Is there any indication of erosion around piers or abutments, of damage from ice or drift or of damage due to inadequate clearances of inadequate span lengths? No
(e) What is the elevation of the clearance line on this structure referred to same datum as used above 42

## (C) FOUNDATION SURVEY

(1) Character of material composing stream bed and banks Sand

(2) Character of foundation material (give all data from soundings or borings) O.W.R.R.&N Co. drove a 60 ft. pile without striking bottom. We drove 15 feet without solid base.

(3) Distance from stream bed to solid foundation material ?

(4) If piling have been driven into these strata at any point near at hand, furnish following data: (a) Character of driving 25 ft. into sand for Conc. footings. (b) Depth of penetration

(5) What type of foundations have been used on structures near by

## (D) GENERAL DATA AND RECOMMENDATIONS FOR NEW WORK

(1) Total recommended length for structure and approaches, from sta. 516+80 to sta. 526+80 or 1000 feet.

(2) Number and length of spans recommended

(3) Can any of the approach structures recommended above be filled should the same prove economical?
If so, between what stations

(4) Type of structure recommended

(5) Width of roadway and number and with of sidewalks

(6) Recommended grade line (show by sketch) shown on Vicinity Map

(7) What is approximate cost of approach filling material per c. y. at this site? 0.30

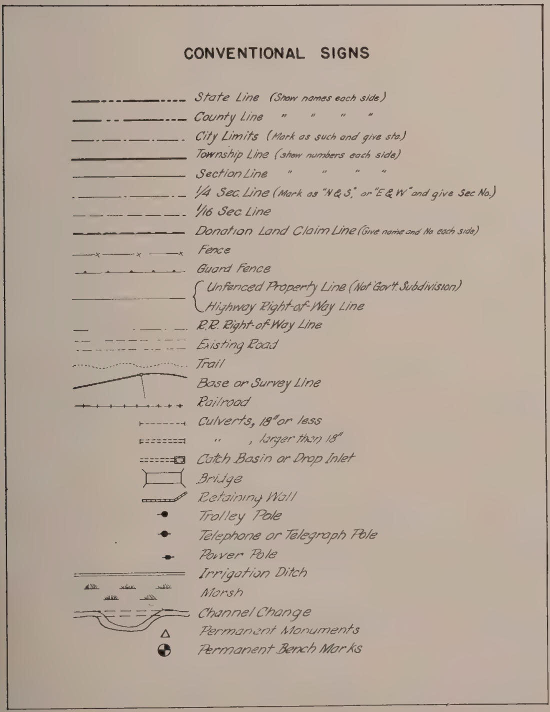
(8) Will temporary bridge be needed ~~or can traffic be detoured?~~ No

(9) Recommended clearance for superstructure to permit passage of logs or drifts, etc. Clearance will be ample
Elevation

(10) Are there any special conditions controlling the following:
(a) The spacing of any one or more piers No
(b) The length or vertical clearance of any one or more spans No
(c) The length or angles recommended for any special wingfall construction No
(d) The depth of any one or more footings Piling for footings

(11) Are there any other special features to provide for?
Place highway bridge piers according to location of R.R. piers to accommodate current flow.

If the structure contemplated involves a grade separation with an existing railway or a crossing of a navigable waterway, special information must be furnished to cover same. Blank forms covering the specific data needed in this connection will be mailed upon request. Accompanying the above report should be submitted a map of the site on a sheet 22 x 34 inches, giving the data covered in circular letter dated March 14, 1925, in reference to vicinity maps. (Copies of this circular will be furnished upon request.)




Form E-35-6M-11-44

Oregon State Highway Commission

## TRAVERSE SHEET

County Hood River Section Cascade Locks - Viento Calculated by Stein
Highway Columbia River Line 'Loc.' Sheet No. 14 Checked by Kirkpatrick

| STATION | Curve Data: Degree | Curve Data: Angle | Tan. | Sub. Tan. | P.I. to P.I. | Calculated Course | Cosine | Sine | Latitude N. | Latitude S. | Departure E. | Departure W. | Co-ordinates Lat. | Co-ordinates Dep. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 619+59.59 P.S. | | | | | | | | | | | | | 740,233.46 | 1,687,315.20 |
| 624+59.59 P.S.C. 625+14.88 P.I. 625+65.59 P.C.S. | 2°30' C.L. | 15°09' | | 555.29 | | | | | | | | | | |
| 630+65.59 P.T. | | | 41.96 | | 1534.2 | N87°09'E | .0497214 | .9987631 | 76.28 | | 1532.32 | | | |
| 631+07.55 P.S. | | | | | | | | | | | | | 740,309.74 | 1,688,847.52 |
| 636+07.55 P.S.C. 640+44.51 P.I. 643+83.38 P.C.S. | 4° C.R. | 51°02' | | 936.96 | | | | | | | | | | |
| 648+83.38 P.T. | | | 20.31 | | 1628.93 | S41°49'E | .7452821 | .6667493 | | 1214.01 | 1086.09 | | | |
| 649+03.69 P.S. | | | | | | | | | | | | | 739,095.73 | 1,689,933.61 |
| 652+03.69 P.S.C. 655+75.35 P.I. 659+02.65 P.C.S. | 4° C.L. | 39°57½' | | 671.66 | | | | | | | | | | |
| 622+02.65 P.T. | | | | | | | | | | | | | | |

## SECTION 12. SOILS

*Article*

1. General.
2. Foundations for Structures to be Shown on Vicinity Maps.
3. Subsurface Investigations.

### Article 1—General

The theory of soil mechanics has not progressed sufficiently to adapt but a small part of the field procedure to rules. However, it is believed that a knowledge on the part of the Field Engineer of the fundamentals of soil mechanics and the characteristics of the various types of soils will result eventually in better road design and construction methods.

To this end the Field Engineer first should familiarize himself with the various types of soils as contained in a given grading project or underlying a surfacing project. While it would be desirable to make borings or sink test holes frequently and make up a soil profile, it is realized that the funds allocated for engineering would not be sufficient to cover the cost involved in such a procedure. It is believed, however, that a fair idea of the general types of soils to be encountered can be obtained by taking laboratory tests on soils exposed by a few carefully selected test holes, old road and railroad cuts, and exposures in gulches, etc.

After having obtained a knowledge of the types and characteristics of the various soils and the topography of the country, the engineer will be in a position to adapt the design and construction of the project to the materials encountered. A few of the problems encountered are listed below:

If material heavy in clay content, such as an A-6 or A-7 soil, is encountered in a cut, an effort should be made to distribute it either near the upper portion of a high fill or the lower portion of a low fill. This may generally be done by cross hauling. These materials containing a large amount of clay should not be placed in high fills when the moisture content is great enough to make the fills unstable. As soils of this nature do not drain readily by mechanical means, it sometimes happens that a partially completed fill, which has excess water, will collapse later when being completed. The critical moisture content cannot be definitely given for any certain soil, but some idea might be had by submitting soil samples to the laboratory, together with information on the height of fill.

The foundation of fills exceeding 15 to 20 feet in height should be investigated, and if the character and condition of the underlying soil cannot be otherwise determined, test holes should be sunk. It will usually be found that underground water coupled with high clay content or muck soils cause most fill foundation failures. The slope of the fill foundation also has a decided bearing on the stability. A system of deep trenches either above the fill or through the fill foundation will usually stabilize them. Care must be taken, however, to construct these trenches of sufficient depth to thoroughly drain the surrounding material. Fills constructed on muck or silt foundations, such as the tide flats of the coast section, may be stabilized from sliding by means of surcharge material placed on each side, thus widening the base. Some research has been done by the Salem office on the height and depth of surcharge, and such information may be obtained by writing to the Salem office.

Occasionally fills are built on ancient slides. If, through a study of the topographical features of the country, this fact is known, test holes should be sunk to determine the presence of undesirable soils or ground water, or both. If conditions are unfavorable for a fill foundation, it might be possible to reduce the height of the fill or drain the proposed foundation.

The tendency of certain soils to high capillarity effects both the height of the grade line and the amount of surfacing material to be placed to prevent frost action. While no definite rules establishing grade heights or thickness of surfacing for certain soils can be given, it is believed that a knowledge of this characteristic in a certain soil will lead to comparisons with other sections of highways where such trouble has been encountered and will result in raising the grade or thickening the surfacing on the project being considered.

The effects of clay, even in very small quantities, in gravel or rock to be used as a base underlying oil is well known. A laboratory test of the minus ten mesh part of the sample should establish a plastic index of less than six for a good base.

Many other problems dealing with soils come up in the ordinary grading and surfacing projects. It is urged that the field engineers become familiar with the methods of classifying soils and obtain a knowledge of the character-

istics of these various soils under action of traffic and the elements. Several books are published on this subject, i. e., "Engineering Properties of Soil" by Hogentogler, and pamphlets have also been issued by the Public Roads Administration and by several technical magazines.

### Article 2—Foundations for Structures to be Shown on Vicinity Maps

Subsurface indications shall be shown on all vicinity maps for structures and shall be taken by means of driving rods or bars as deep as possible into the ground or by borings with an auger.

### Article 3—Subsurface Investigations

If extensive investigation is necessary to determine the subsurface structure of the ground, the Construction Engineer shall be notified of the conditions by letter through the Division Engineer, and arrangements will then be made to perform the necessary work.

Requests for subsurface investigations shall be initiated and conducted as "State Force Order" items. Approval must be secured on Form A-105 before the work is started.

The account number for charging costs of subsurface investigations will be assigned by the Salem office.

## SECTION 13. CONSTRUCTION

*Article*

1. Relations Between Department Employees and the Contractor.
2. Resident Engineer to Plan Work With Contractor.
3. Instructions to Contractor to be in Writing.
4. Resident Engineer to Keep Close Contact With Construction Details.
5. Notification of Contract Commencement and Completion Dates.
6. Transcript of Contractor's Payrolls on Federal Aid Projects.
7. Pictures to be Taken During Construction.
8. Photographer Available for Limited Field Work.
9. See that Contractor Stores Blasting Materials Safely.
10. Check Amount of Powder Used.
11. Protect Adjacent Property During Blasting.
12. See That Obstructions are Removed From Right of Way.
13. Check Bridge Grades to Fit Grading.
14. Change of Contract Terminus.
15. Extensions of Contract Time Limits.
16. Changes in Specifications.
17. Holiday Suspension of Construction Operations.
18. Projects to be Marked for Prospective Bidders.
19. Conducting Prospective Bidders Over Project.
20. All Trucks to be Licensed.
21. Contractor Shall Comply With Existing Laws.
22. State Forester to be Notified Prior to Clearing.
23. Confine Contractor's Operations Within the Right of Way.
24. Record to be Kept of Material Received on the Job.
25. Operation of Contractor's Equipment Across Railroad Tracks.
26. Compaction of Embankments.
27. Keep Close Check on Grading Quantities.
28. Detail Quantities to be Computed on Final Estimate.
29. Local Soft Places to be Stabilized.
30. Selection of Stabilization Material for Subgrade.
31. Shoulder Construction.
32. Flagmen to be Courteous.
33. All Detours to be Approved by State Highway Engineer.
34. Sub-contracts With Contractor.
35. Abandoned Right of Way to be Barricaded.
36. Markers to be Placed at Each End of Federal Aid Projects.
37. Claims Against Contractors' Bond for Materials and Labor.
38. Engineer to Keep Accurate Costs on Project.
39. Inspectors' Authority.
40. Inspectors to be On Job and Constantly Check Work.
41. Inspectors to Study Plans and Specifications.
42. Mixes Shall Not Be Changed by Field Men.
43. Inspection of Subgrade.
44. Check Installation of Forms.
45. Production of Materials.
46. Sample to be Sent to Engineer of Materials.
47. Portland Cement Concrete Pavement.
48. Cement Adjustment.
49. Inspector's Report.
50. Asphaltic Concrete Pavement.
51. Macadam or Gravel Base.
52. Oiling.
53. Remove Warning Signs When no Longer Needed.
54. State Employees to Use Warning Signs.
55. See that Signs are Intelligently Placed.
56. Construction Jobs to be Signed by Contractor.
57. Project Signs to be Placed by State.
58. Standard Signs.

### Article 1—Relations Between Department Employees and the Contractor

Relations with the contractor and his employees should be maintained on a friendly, courteous and businesslike basis.

Careful and competent supervision of a project is essential if the best results are to be achieved. Resident Engineers will guard against the use of methods or materials that might be prejudicial to the interests of the Department.

Department employees shall not engage in arguments with the contractor or any member of his organization. Disputed points should be referred to his superior for decision and until that is received, he should use his best judgment.

### Article 2—Resident Engineer to Plan Work With Contractor

Before work on a project is started, the Resident Engineer should arrange to go over the work with the contractor and ascertain the latter's program and plan of operation. A schedule should be arranged for the work and when the job is under way the schedule should be maintained as closely as possible. The engineer should make certain that the contractor interprets the plans and specifications correctly and that his force and equipment on hand or en route to the job are adequate to perform the work satisfactorily.

### Article 3—Instructions to Contractor to be in Writing

Instructions or formal orders to the contractor shall be contained in a letter setting forth the reason therefor. The Resident Engi-

neer should remember that verbal notices are of no record value, and difficult to substantiate in court. Copies of written instructions to contractors shall be sent to the Division Engineer.

In matters requiring immediate attention, the Division Engineer shall be notified by wire or telephone before action is taken.

### Article 4—Resident Engineer to Keep Close Contact With Construction Detail

The Resident Engineer shall make frequent inspections during the progress of the work and assure himself that the work is being carried on in full compliance with the specifications. In going over the work he will give such orders as may be necessary and see that they are carried out.

He will assist the contractor in every way possible to carry on the work to advantage. To this end he will see that line and grade stakes are provided when and where necessary.

It is required that the Resident Engineer keep a watchful eye on all phases of the work, and if he sees where changes could be made which would be of advantage, he should take the matter up with the Division Engineer at once.

### Article 5—Notification of Contract Commencement and Completion Dates

Resident Engineers shall hereafter give notifications of commencement and completion of work on contract projects, in accordance with the following instructions:

(a) Three separate notifications will be required for each project. The first is to be a notification of the commencement of work. The second is to be a notification of the completion of work. The third is to be a notification of the removal of contractors' equipment and plant.

(b) The notifications are to be made on Form No. E-233. Each shall be made in triplicate, one copy being sent to the Salem Office, attention of the Office Engineer or the Bridge Engineer as the case may be, one copy being sent to the Division Engineer and one copy retained by the Resident Engineer.

(c) The practice whereby resident engineers send notices of commencement and completion to W. H. Lynch, District Engineer of the PRA, is discontinued, and no notices or copies of notices are to be so sent hereafter. The notifying of the PRA will be attended to by the Salem Office.

(d) Notifications are to be submitted for State contracts as well as for federal aid contracts.

(e) The day to be reported as the day of commencement shall be the day on which workmen employed by the contractor or a subcontractor begin the erection of plant, the development of sources of aggregates, the clearing, or the performance of a construction operation called for by the contract. Commencement of the work of assembling, repairing or transporting equipment for the job, and the commencement, by a manufacturer or dealer, of the manufacture or delivery of materials, is not, ordinarily, to be considered commencement of the work.

(f) The day to be reported as the day of completion of work shall be the day on which the last details of work required of the contractor to bring the project to completion, are performed. *Additional days on which the contractor may work in dismantling and removing his equipment and plant should not be included as a part of the completion time.*

(g) The day to be reported as the day on which the removal of equipment and plant is completed shall be the day on which the contractor completes such removing of equipment and plant and cleaning up of plant sites as is called for by the specifications.

(h) Notifications are expected to be submitted on the same day the commencement or the completion being reported on, occurs.

(i) Commencement and completion dates are to be definitely established at or before the time the notification is submitted and, having been established, shall be shown the same on all reports, estimates and other documents on which showings of the dates are called for. If any situation arises which requires a change in a date, after the date has been reported, the Division Office and the Salem Office should be fully advised.

(j) When an overrun of specified time limit occurs, the extension of time to be granted need be only sufficient to cover the completion of work as defined in paragraph (f) above. The extension need not cover the time required for the removal of equipment and plant.

(k) It is not to be construed that the "completion date" or "day of completion", as defined herein and as reported on Form E-233, is anything more than a date fixing the time beyond which no penalty for overrun of time limit will be charged. It is not to be confused with, or to be considered as, either the date of acceptance or the date on which the contractor's obligation under the contract expires. The "date of acceptance" for the contract is the date on which the Highway Commission formally accepts the work as completed.

(1) Formal acceptance of the work by the Commission will not be made until after the contractor has completed the removal of his equipment and plant and has cleaned up the premises in a manner acceptable to the engineer. Final payment to the contractor will not be made until after the formal acceptance has been made.

### Article 6—Transcripts of Contractor's Pay Rolls on Federal Aid Projects

The Resident Engineer will obtain from the contractor, each week, three "transcripts" of the contractor's pay roll for the preceding week. P. R. A. form No. 176 will be used for this purpose and will be furnished by the contractor. Two copies will be submitted to the Construction Engineer at Salem and one copy retained by the Resident Engineer.

Resident Engineers are expected to see that the contractors submit their pay rolls promptly and in proper form, and to see that all pay rolls are carefully checked for completeness and for compliance with specified labor requirements before forwarding to the Salem office. Particular attention should be given to see that:

Correct and complete project designation is shown in the pay roll heading and in the affidavit;
Duplication of names on the pay roll is indicated;
Totals of unduplicated names for each labor group are shown;
Labor secured from the Employment Service is indicated;
Indication is made whether the pay roll is from the contractor or subcontractor;
All copies of the pay roll are clearly legible.

Transcripts of contractor's pay rolls will not be required on "State" jobs where Federal Funds are not involved.

### Article 7—Pictures to be Taken of Work During Construction

Pictures taken before, during and after construction are valuable as a record of the project and for future reference, especially views of unusual conditions, unusual methods of construction or other interesting features.

Each Resident Engineer will send in at least six pictures of each project under his supervision, the pictures to be taken at such times and places as will show the most interesting or unusual features of that particular job. The negatives and one print of each are to be sent to the Construction Engineer. The Division Engineer will be supplied with a print also, if he so desires.

The date the picture was taken and the location by station or mile post must be placed in ink on the edge of the negative. The date and location should also be placed on the back of the print with such other description or information as is necessary to describe the picture.

If no camera is otherwise available, the Resident Engineer is authorized to rent one, at a nominal cost, for a few days and carry the cost on his expense account.

The cost of the films shall be carried on the Resident Engineer's expense account.

We have in our organization a photographic laboratory and an expert photographer on our pay roll for full time work. In order to make full utilization of these facilities, all pictures taken in the field of construction work shall be sent to the Construction Engineer with a request for developing and printing.

If personal pictures are included in a roll of film along with construction pictures the film will be developed but prints will not be made.

### Article 8—Photographer Available for Limited Field Work

In addition to laboratory work, such as film development, printing, etc., the photographer will be available for a certain amount of field photography. However, in order to avoid interference in scheduling, all requests for the photographer's services shall be made to the Director of Travel and Information, under whose direction the photographic laboratory is operated.

### Article 9—See that Contractor Stores Blasting Material Safely

Although the contractor is entirely responsible for injury and/or damage to persons or property that might occur by reason of storing, handling or the using of explosives it is suggested that he be cautioned to keep his powder house locked at all times and to use every possible precaution to guard against accidents of any kind.

### Article 10—Check Amount of Powder Used

In rock excavations and other places where blasting is necessary, a careful check should be made of the amount of powder used in each cut or unit of the job.

### Article 11—Protect Adjoining Property During Blasting

When any utilities are endangered by the contractor's blasting operations, the Resident Engineer will be personally responsible for notification to the owners. He shall personally contact any telephone, telegraph, or power line companies and advise the local men in charge of all contemplated blasting operations and secure their approval before any blasting is undertaken which might jeopardize their operation.

With particular reference to railroads, it shall be the duty of the Resident Engineer to notify the Division Engineer or Superintendent of the railroad of any blasting contemplated wherein railroad property would be endangered and ascertain from them the hour at which such blasting may be undertaken and what manner of flagging will be necessary to protect the railroad's interest. Instructions given by officials of the railroad, regarding blasting which might involve their property, shall be followed explicitly.

Under no circumstances shall the contractor be permitted to blast until the above conditions have been met.

It shall also be the duty of the Resident Engineer to advise adjacent property owners of intended blasting operations when such operations will endanger personal property.

If the contractor claims to have negotiated as above in lieu of the Resident Engineer, this will not relieve the Resident Engineer of his responsibility and he must satisfy himself fully that all conditions have been met.

### Article 12—See that Obstructions are Removed From Right of Way

The Resident Engineer shall see that obstructions on the right of way which interfere with the contractor's work are removed. If owners are tardy in the removal of such facilities, the matter is to be called to the attention of the Division Engineer by letter stating the facts in full.

### Article 13—Check Bridge Grades to Fit Grading

The Resident Engineer shall check the grade elevations of all bridges being built along his project and satisfy himself that the profile grade for the graded section will meet the grade of the structure. If differences of consequence are found the Division Engineer shall be promptly notified before changes are effected.

### Article 14—Change of Contract Terminus

Requests for approval for a change of terminus of a contracted project must be submitted as soon as the necessity therefor becomes apparent, and in all cases prior to submission of the final voucher. This procedure will expedite payment of final claims.

The Department has consistently refrained from extending any projects, but there have been certain projects which were shortened slightly to balance material or make a more suitable connection to an existing road. Please see that the Construction Engineer is formally notified of any such change so that the request can be submitted to the Public Roads Administration in ample time.

### Article 15—Extensions of Contract Time Limits

Our standard construction specifications covering both roads and bridges provide that in those instances wherein the contractor finds it impossible to complete the work within the time specified, extensions of time may be granted by the Highway Commission. The specifications, however, provide that these extensions shall only be granted upon written application made by the contractor to the Highway Commission, which application must be accompanied by the written consent of the contractor's surety.

Where an extension of time appears necessary, the contractor's written request, accompanied by the written consent of his surety, as provided in the specifications, should be received by the Salem Office in sufficient time to permit the Highway Commission to act upon such request before the expiration of the time limit given in the contract, together with any extensions thereto previously granted.

Since the Highway Commission is not in continuous session, these requests should be forwarded, through the Division Engineer, to the Salem Office at least thirty days in advance of the above expiration date.

Resident Engineers on construction are requested to watch this detail very carefully and initiate proceedings with their contractors in sufficient time to comply with the foregoing time limit.

Mimeograph forms are available for the contractor's request and the surety's consent; also a form for the recommendation of the Division Engineer. Sufficient forms to cover all of the contracts under his direction will be sent each Resident Engineer upon request addressed to the Construction Engineer. Three signed copies

of the request and the surety's consent should be furnished the Division Engineer in each case.

### Article 16—Changes in Specifications

The fact is emphasized that specifications on Public Roads Administration projects represent a contract entered into by the State of Oregon and the U. S. Government, and any changes in these specifications is in reality a violation of this contract. This makes it of vital importance that all changes in specifications or amounts must be approved by the P. R. A. before the change can be inaugurated.

Certain minor changes can be approved by the Portland office, other changes can be approved by the Regional office, others by the Chief Engineer, but changes which radically affect the contract can only be approved by the Secretary of Agriculture.

It is, therefore, requested that the Construction Engineer be advised in an official manner of any and all changes which are contemplated in carrying out the contract so that the P. R. A. may be fully advised before they are started. Even though the Division, Construction or Highway Engineer has tentatively discussed these plans in the field, the Resident and Division Engineer should, as soon as the details and amounts have been determined, advise the Construction Engineer by letter.

### Article 17—Holiday Suspension of Construction Operations

Generally construction operations will be suspended on legal holidays if it is expected that there will be considerable volume of traffic through the project. However, if construction operations will not interfere with traffic it will not be necessary to suspend operations.

Usually if a holiday falls on a Monday the preceding Saturday afternoon and the whole day of Sunday shall be a period of no construction.

The approval of the Division Engineer is necessary before issuing orders to suspend operations during holiday seasons.

### Article 18—Projects to be Marked for Prospective Bidders

All projects being advertised for letting are to be plainly marked in the field in such a manner that the project can be readily found and followed by the contractors and others who are interested therein.

The center line is to be brushed out so the line can be readily followed; the center line is to be staked and stakes plainly marked; right of way laths are to be set, with stationing on each.

The beginning and end of the project shall be plainly marked as well as all quarries, gravel, topping and special borrow pits and roads leading thereto.

Where the project cannot be looked over from a car, the road used to approach the project should be marked to show the entrance to the job. If the project parallels the old road it would be a convenience if stakes, with stationing and distance to the new line were placed at intervals, the distance between the stakes to depend upon the length of the job, etc.

Other important features might be marked, but this will be left to the judgment of the Resident Engineer as it is impossible to set a standard rule for all jobs.

As stated above, the object is to plainly mark the project so that it can be readily found and followed from end to end.

### Article 19—Conducting Prospective Bidders Over Project

Some criticism has been received from the contractors that our Resident Engineers are not always available to show them over the prospective jobs. It is, therefore, suggested that on the days immediately prior to the letting, when it is anticipated that contractors will be viewing the job, the Resident Engineer arrange his work so as to be available. In case the Resident Engineer has not already been assigned, or is not familiar with the job, someone familiar with the work should be detailed as a guide for the contractors. The Construction Engineer should be notified at least a month prior to the date of the letting as to those available to conduct the contractors over the work.

### Article 20—All Trucks to be Licensed

Please report to the Superintendent of Transportation, Public Utilities Commissioner at Salem, all trucks that are working on our projects for compensation which do not carry Oregon licenses and motor transportation licenses, or the P. U. C. plate.

### Article 21—Contractor Shall Comply With Existing Laws

The contractor shall comply with all existing State, Federal and local laws in the operation of his contract.

### Article 22—State Forester to be Notified Prior to Clearing

The contractor, before starting clearing, shall request a burning permit from the State Forester, giving a general description of the right of way to be cleared. If the project is in a national forest, request shall be made to the U. S. Forest Service. After a permit has been secured, the contractor shall proceed with clearing and burning in compliance with the terms of the permit.

### Article 23—Confine Contractors' Operations Within the Right of Way

It is one of the duties of the Resident Engineer to see that the construction is carried on within, or confined to, the right of way. Where additional rights of way, encroachments and/or easements are necessary, the engineer shall obtain them through the Right of Way Department and shall keep the contractor off the property until the right of way has been procured, or until satisfactory arrangements have been made with the owner and written permission has been received to enter upon said property.

### Article 24—Record to be Kept of Material Received on the Job

The Resident Engineer should arrange to have a complete record of all asphalt, oil and cement received on the job. If the material is received by railroad, note the initial, number, kind of car, the date of arrival and of unloading and the condition of the material. Similar information shall be noted if other means of transportation is used. (See Sec. 17—Reports.)

### Article 25—Operation of Contractor's Equipment Across Railroad Tracks

On construction projects adjacent to railroads the contractor and his superintendent shall be cautioned of the danger of moving equipment, especially caterpillar tractors, carryalls, tournapulls, etc., across tracks, particularly at points other than regular crossings.

Serious accidents may be caused by rails loosened or bent by heavy equipment.

The contractor is to be advised that when it is necessary to move equipment across tracks, especially at points other than at regular crossing, every possible care should be exercised to avoid any movement or damage to rails or roadbed and that he or his superintendent should, for safety's sake, notify some official or supervisor of the railroad before the equipment is moved.

### Article 26—Compaction of Embankments

Special care shall be taken to see that proper compaction is obtained at points along the grade where the roadbed changes from cut to fill, and at places where fill material is deposited against previously compacted material or against structures.

### Article 27—Keep Close Check on Grading Quantities

The Resident Engineer shall keep close check on the excavated materials to see that the shrinkage or swell factors which were used in making up the location mass diagram are correct. If too much variation occurs the Resident Engineer shall immediately notify the Division Engineer in writing and await his action before making any change. If the matter is urgent the Division Engineer shall be notified by telephone.

### Article 28—Detail Quantities to be Computed on Final Estimates

The volumetric quantities of all material entering into the constructed project shall be determined by actual computations. All items which cost to exceed $2.00 per cubic yard shall be computed to the nearest hundredth of a cubic yard. Materials estimated on a square yard basis shall be computed to the nearest tenth of a square yard for unit costs under $2.00 and to the nearest hundredth if over $2.00 per square yard.

### Article 29—Local Soft Places Shall Be Stabilized

Unsuitable material, causing local soft spots, shall be removed from the grade. Such spots shall be well drained and backfilled with gravel topping or rocky material. On surfacing jobs it will be necessary to submit Force Account or Price Agreement forms to perform this work.

### Article 30—Selection of Stabilization Material for Subgrade

Selection of materials for road stabilization shall be made within the limits of the contract and shall be obtained so as to not incur additional cost except for the haul. If suitable material is not obtainable within the right of way, authorization for the additional cost involved shall be obtained in the regular manner.

### Article 31—Shoulder Construction

Shoulders shall be built exactly to grade and line, no allowance shall be made for settlement.

### Article 32—Flagmen to be Courteous

Flagmen shall always be courteous and have a pleasant demeanor when required to stop, control or give information to the public.

Contractors should be informed that traffic control men must meet the above requirements.

### Article 33—Detours to be Approved by the State Highway Engineer

Complete plans must be submitted by a contractor who intends to detour traffic in any manner other than that specified in the contract or on the plans. Plans should include:

(a) Route shown on sketch map.
(b) Flagmen to be used.
(c) Care of roadway surface.
(d) Signs to be used and where.
(e) Reason for detouring traffic.

All detours must be approved by the State Highway Engineer before being put into use. Inclusion of a detour in the plans and specifications indicates that only the specified detour is approved. If others are considered they must be approved as above. (See Sec. 13, Articles 55, 56 and 58.)

### Article 34—Sub-contracts With Contractor

In general, five copies of sub-contracts shall be submitted to the Division Engineer, together with a letter of explanation and the Resident Engineer's recommendation. These copies are to be distributed as follows:

One copy for the Salem Office.
One copy for the Public Roads Administration or other government agency.
One copy for the Division office.
One copy for the Sub-contractor.
One copy for the Contractor.

It is advisable for the Resident Engineer to retain or make a copy of the sub-contract for his own files.

The sub-contract should refer specifically to the original contract and make the parts of such original contract that are pertinent to the sub-contract a part of the sub-contract.

New instructions are frequently issued in letter form regarding sub-contracts. Be sure the latest information is used.

### Article 35—Abandoned Highway to be Barricaded

Whenever any part of an old highway is abandoned and not used because of the construction of a new line, barricades shall be erected so that it cannot be used by the general public.

### Article 36—Markers to be Placed at Each End of Federal Aid Project

Resident Engineers shall place a temporary marker, of sufficient dimensions to be readily seen from the roadway, at each end of Federal Aid projects under their supervision, as soon as the project is completed. The Division Engineer is then to be notified by letter that the temporary markers have been set and the following information supplied:

Station at the beginning of the project.
Federal Aid number and prefix.
Station at the end of the project.
Permanent markers will be set by the Sign Department.

### Article 37—Claims Against Contractors Bond for Materials and Labor

Claims against any contractor for materials, labor, supplies, etc., must be filed with the Secretary of State within 6 months after acceptance of the completed contract by the Highway Department. For further information regarding claims of this sort, reference is made to "Oregon Road Laws" under "Public Contracts" or Oregon Code 67-1101.

### Article 38—Engineer to Keep Accurate Costs on Project

It shall be the duty of the Resident Engineer to keep an accurate account of all engineering costs on each project under his control. These costs are to be entered on all required reports in the proper places. (See under Weekly Report and Quantity Summary, Section 17.)

The amount of work completed under contract shall be determined by actual measurement and observation in the field. (See under "Monthly Estimates", Sec. 17.) Attention is called to booklet "Account Numbers for Distribution of Costs", these booklets explain the cost keeping system employed by the Highway Department and give account numbers to be used when distributing charges to any job or project. Copies of this booklet may be obtained through the regular requisition channels.

### Article 39—Inspectors Authority

Inspectors on construction projects shall follow the instructions and methods set forth in Technical Report No. 43-1 "Manual of Standard Practice for Paving Inspectors" and Technical Report No. 43-2 "Manual of Standard Practice for Sampling Construction Materials."

All inspectors on a construction project, except inspectors who are assigned to a project by the Engineer of Materials, shall work under and report directly to the Resident Engineer.

Men who are assigned by the Engineer of Materials shall report to him, but they shall also confer with the Resident Engineer. The inspectors shall have authority to enforce the specifications, and if differences arise with the contractor the matter shall be decided by the Resident Engineer, or if necessary by the Division Engineer, whose decision shall govern. Inspectors who are assigned by the Engineer of Materials shall report differences with contractors to him but shall confer their differences with the Resident Engineer for his consideration.

### Article 40—Inspectors to be On Job and Constantly Check Work

It is essential that the inspector be on the job at all times while construction operations are in progress. He must not leave the work in care of an assistant unless he has the Resident Engineer's permission to do so, and the latter must know that the substitute inspector is competent to attend the work.

The inspector must not take anything for granted but shall check everything carefully. Most contractors endeavor to do what is right and do not resent constructive criticism or inquiry, but those who are opposed to careful inspection need watching all the more.

### Article 41—Inspectors to Study Plans and Specifications

It shall be the duty of all inspectors to study the plans and specifications for the job to which they are assigned. If anything is found which is not thoroughly understood the Resident Engineer shall be consulted.

### Article 42—Mixes Shall Not be Changed by Field Men

All mixes shall be computed and set by the Engineer of Materials, and under no circumstances may any field inspector change same, except on authority of the Engineer of Materials, or his headquarters representatives.

### Article 43—Inspection of Sub-grade

The preparation of the sub-grade will be fully covered by the plans and specifications. Of considerable importance is the undesirable occurrence of local soft spots in the completed sub-grades. If places occur in the sub-grade that are weak, they should be immediately reported to the Resident Engineer who will take the proper action necessary. (See 13-29.)

### Article 44—Check Installation of Forms

Usually the engineering party will check forms to see that they are set to proper grade and line, but following this check there usually occurs slight variations in the form lines due to trucks, rollers, gaps left open for trucks, etc. It is the duty of the inspector at the point of depositing materials on the grade to see that all forms are true to grade and line.

### Article 45—Production of Materials

An inspector shall be assigned to each crushing or rock production plant, except small plants which may be inspected on a part time basis.

It shall be the duty of inspectors assigned to a material production project to see that all materials produced to be later incorporated in the roadbed shall pass the specifications.

Form 87FF "Daily Plant Report—Bituminous Mixtures" shall be submitted by Plant Inspectors. Distribution is printed on the face of the form.

### Article 46—Sample to be Sent to Engineer of Materials

It shall be the duty of the inspector in charge of any particular branch of inspection to obtain samples of material necessary for submission to the Engineer of Materials (See section "Materials and Tests"). These samples shall be turned over to the Resident Engineer for submission to the Testing Laboratory. (Refer to Technical Report No. 43-2 "Manual of Standard Practice for Sampling Construction Materials.")

### Article 47—Portland Cement Concrete Pavement

Specifications for Portland cement concrete pavement are covered in Section 31 of the Department's "Specifications and Contract Agreement for Highway Construction."

Technical Report No. 43-1 entitled "Manual of Standard Practice for Paving Inspectors" and Technical Report No. 43-2 "Manual of Standard Practice for Sampling Construction Materials" contain valuable information concerning their respective subjects and all field engineers and inspectors shall provide themselves with copies of these manuals.

### Article 48—Cement Adjustment

Contracts are let on the basis that 1.54 bbls. of cement will be used in the mix. However, during construction a value of about 1.45 bbls. is used, necessitating an adjustment in favor of the Highway Department. If the amount of cement used exceeds 1.54 bbls. an adjustment shall be made in favor of the contractor.

To substantiate any cement adjustment figures, it is necessary that the inspector keep

an accurate account of all cement delivered to the job, including the date, manner of transportation (truck, railroad, etc.), name of freight car, number of car or driver of truck, etc. A slip shall accompany each shipment signed by a representative of the Materials Department, this slip shall be turned in to the Resident Engineer immediately upon receipt of the cement. (See 14-2 Price Agreements.)

**Article 49—Inspector's Report**

Form E-81 "Concrete Paving Inspector's Daily Report" shall be prepared by the inspector. All items on this report shall be properly made out. Be sure to have the cement count O. K.'d by the contractor or his representative. Under "sacks estimated" use the value of 1.54 bbls. per cubic yard, expressed in equivalent sacks per panel (dist. between expansion joints).

**Article 50—Asphaltic Concrete Pavement**

The construction of Asphaltic Concrete Pavement is covered in the Highway Department's "Specifications and Contract Agreement for State Highway Construction" and in Technical Report No. 43-1 "Manual of Standard Practice for Paving Inspectors." Copies of Technical Report No. 43-1 may be obtained from the Engineer of Materials, Salem.

**Article 51—Macadam or Gravel Subbase**

The construction of gravel or macadam subbase lends itself to the individual effort of all persons on a construction party. Set rules are practically impossible. Individual experience is of prime importance. A mention of a few points, which have been found most practical in this type of construction, follows:

(a) Be sure that the sub-grade is in proper shape before any gravel or crushed rock is placed in it. All rolls should be taken out of the grade.

(b) Every weak place shall be stabilized by removing poor materials and replacing them with desirable materials. (See Sec. 13, Art. 29.)

(c) Computations shall be made as to the exact amount of surfacing to be placed on the sub-grade. These figures should be reduced to the amounts necessary for a 100′ section.

Material shall be spread uniformly on the sub-grade; piling materials shall not be permitted. Material accidently piled shall be spread properly before well spread sections are bladed.

(d) It is sometimes useful to withhold a small percentage of material composing various lifts in subbase to be used in spotting out low places that develop during the rolling operations. No attempt should be made in this manner to decrease quantities, the point being that a reserve is developed for final leveling of each lift.

In subbase composed of larger materials, it has been found most practical to remove at random a few large key rocks during the rolling operations as a method of eliminating small humps in the surface. The practice of disturbing the entire surface by rakes or picks has proven unsatisfactory, as it is extremely hard to guage necessary amounts after the surface is so disturbed.

(e) In regard to the placing of finer materials on the surface of a heavier base, it has been found that the best practice is to dampen the surface of the heavy base and apply thin layers of the fine materials together with additional water, rolling to be carried on during the spreading operations.

A little experimenting on each individual project will suggest the amount of water to be used. The objective being that the finished product will be well keyed and rigid.

The initial application of water prior to placing of the fines acts as an agent to retard the sifting of fines to the lower regions of the heavier base course. Subsequent layers of fine materials combined with the watering tend to develop a dense base in which the materials are not segregated to the extreme.

(f) Blading operations on surfacing of this type are best carried on in such manner that materials are carried ahead to fill low places. A reverse trip should be made back over the same route, which will permit materials to be carried into low spots from the opposite direction. If blading is made continuous in one direction, it is very hard to eliminate local depressions in the grade as material is carried forward continually and the ultimate result is the construction of a long sag in the surface.

Good surfacing practice requires that the man in charge must observe closely the entire surface from the edges of the road and other vantage points. A casual inspection by traveling over the road in a car is impossible. When this type of construction develops a considerable rolling surface it is evidence that the inspection has not been thorough.

(g) Rolling should be continued throughout the application of materials to the point of complete compaction before succeeding layers are placed. A statement of the number of rollers required is contained in the specifications.

(h) Absolutely no material containing clay shall be incorporated in macadam construction.

### Article 52—Oiling

Reference is made to Section 13-51 Macadam or Gravel Subbase.

A great deal of the datum contained in the above mentioned section is applicable to this type of construction. Additional references are made herewith to certain phases of this type of construction which have been found most useful.

(a) The specifications require certain temperatures in application of oil. These temperatures shall be taken at the point of application on the grade.
(b) Close watch shall be maintained to see that no oil is heated beyond the limits contained in the specifications.
(c) The application of 1% solution of soap may be applied in the amounts of 10% by volume on heavy type of bituminous Macadam Construction.

### Article 53—Remove Warning Signs When no Longer Needed

It shall be the duty of the Resident Engineer to see that all warning signs that are no longer necessary are promptly removed or covered up.

### Article 54—State Employees to Use Warning Signs

State employees shall at all times protect themselves and the traveling public, while working on the traveled portion of a highway, by the use of proper signs placed in such a way as to give the desired warning to the traveling public, without being dangerous to travel.

If on heavily traveled roads it becomes necessary to place protecting signs in the middle of the traveled portion of the road, it may also be necessary to use a flagman.

If proper signs are not at once available flagmen are to be used.

### Article 55—See That Signs are Intelligently Placed

Detours shall be properly signed and the signs shall be placed in such a manner as to be easily read and interpreted by the motorist.

### Article 56—Construction Jobs to be Signed by Contractor

Our highway construction contracts contain provisions obligating the contractor to erect suitable barricades wherever necessary to protect the traveling public and to provide suitable warning signs, danger signals and signs to direct traffic. There is also given some other detailed information in respect to these obligations.

In some instances the department has erected and maintained such signs and warning devices independent of the contractor. This practice should be discontinued, as we have been advised by the Commission's attorney against this practice for the reason that the contractor may become careless with respect to his obligations, and may assume that the Highway Commission has taken over this detail and has assumed the responsibility for erecting and maintaining all necessary warning signs, barricades and other safety devices.

If it is necessary to guide and direct the public away from a road that is under construction and to direct them to a recognized detour, the attorney advises that the department may erect such directional signs as are necessary to accomplish the result; but that the contractor should be notified in such instances that he is not relieved from any of his contractional obligations. Any signs which the Department may put up to direct the traffic to the proper detours are supplemental and not in lieu of the signs and warnings to be put up by the contractor. In other words, it must be made plain to the contractor, that any directional signs which the Department may place for the convenience of the traveling public, should not be taken as an assumption of the responsibility imposed upon the contractor. The Resident Engineer should see to it that the contractor complies specifically with his obligations with respect to protecting the traveling public by the erection of barricades and other safety devices.

### Article 57—Project Signs to be Placed by State

A project sign is to be placed at each end of construction projects if traffic is to be disturbed in any way.

These signs are to be requisitioned in the regular manner and will be installed by the Sign Department unless specified in the contract to the contrary.

### Article 58—Standard Signs

If it is required that a contractor have signs placed on a project, they shall conform to the State Highway Department's standards and, if desired, may be purchased from the Highway Department Sign Shop at cost. Payment for signs purchased from the Sign Department shall ordinarily be made direct by the contractor and not deducted from the estimate.

The following signs are standard. Additional information may be obtained from the Assistant Maintenance Engineer, Sign Department, at Salem.

OD-11A-42"

OC-47A-36"

OD-18D-24"

OC-13A-24"

OC-35B-30"

OC-28B-30"

OC-54A-30"

OC-65A-30"

OC-38A-24"

OC-5A-24"

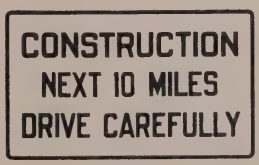
OC-35A-18"

OC-44B-30"

OC-44A-30"

OC-44C-60"

OC-29A-24"




OC-44D-60"

OC-8A-24"

Form E-130—3M—2-44

OREGON STATE HIGHWAY COMMISSION

## NOTIFICATION OF COMMENCEMENT AND COMPLETION DATES FOR CONTRACT PROJECTS

Section *Spring Mt.* Contract No. *3816*

Highway *Fremont* F. A. Project No. *137-C*

County *Lake* Date of Award of Contract *March 15, 1944*

Contractor *Johnson Bros.* Specified Date of Completion *Oct. 31, 1944*

**First Notification:**

Commencement date *April 9, 1944.*

**Second Notification:**

Completion date *October 11, 1944*

Estimate of date on which contractor will complete the removal of equipment and plant and the cleaning up of the site *October 20, 1944*

**Third Notification:**

Date on which contractor completed the removal of equipment and plant and the cleaning up of the site ........

Date *April 9, 1944* *[signature]* Resident Engineer

**Instructions:** Use this form for reporting first, the date on which work under the contract is commenced; second, the date on which the work is completed and, third, the date on which the removal of plant and the cleaning up of the site is completed. Each date is to be reported separately and as soon as it becomes known. Each report is to be made in triplicate. The original copy is to be sent to the Office Engineer or the Bridge Engineer at Salem. The duplicate copy is to be sent to the Division Engineer. The triplicate copy is to be retained by the Resident Engineer.

STATE PRINTING DEPT

(SAMPLE COPY)

## REQUEST FOR TIME EXTENSION ON CONSTRUCTION CONTRACT

Oregon State Highway Commission Date July 10, 1945
Salem, Oregon

Gentlemen:

We, the undersigned, respectfully request an extension of time on our Contract No. 2726, covering the following project:

Albany-Crabtree Corner Section of the Santiam Highway

for a period of 15 days, or up till and including August 15, 1945.

The above request is based upon the following reasons:

Due to continued high water during this spring, in the South Santiam River, we were unable to work on the State owned gravel bar, specified for this contract, until May 28, 1945, which was about thirty (30) days later than we had planned on.

Respectfully submitted,

WARREN NORTHWEST INC.

(signed) J. R. Wininger, President

* * * * * * * * * * * * * * * * * *

Date July 11, 1945

We, UNITED STATES FIDELITY AND GUARANTY COMPANY, a corporation of Baltimore, Maryland, as surety on the bond guaranteeing the completion of the contract above named and listed, hereby join in and consent to said request for extension of time, and hereby agree to remain fully bound as surety in all respects as if the latest extended date hereinabove stated had been stipulated in the original agreement.

UNITED STATES FIDELITY AND GUARANTY COMPANY

(s) by Attorney for Company

Form E-81—2500 Sets—11-41

OREGON STATE HIGHWAY COMMISSION
MATERIALS DEPARTMENT

## Concrete Paving Inspector's Daily Report

Report No. *42*

Project *Halsey-Harrisburg Section* Prefix *22-1111*

Highway *Pacific* County *Linn*

Contractor *Porter W. Yett* Contract No. *2686*

From station *912+51* Date *Dec. 5, 1944*

To station *916+97*

SUBGRADE: Location soft spots ........

CONCRETE:

| | | | Total |
|---|---|---|---|
| Size panel | 12' x 446' | | |
| Sacks Est | | 874 | 874 |
| Sacks used | | 876 | 876 |

Proportions used: Mix by volume *1:1.35:3.00* Mix by weight *94:152.6:339.0*

Slump: Maximum ...... Minimum ...... Average ...... Brand cement *Beaver*

REINFORCEMENTS: Stations used ........

Quantity per panel ...... Spacing longitudinal ...... Spacing transverse *12 in 12 feet*

FINE AGGREGATE: Per cent water by weight—1. *6%* 2. ......

PAVEMENT: Width *12 feet* Thickness *8 in.* Type of joint—Expansion *3/4"*

Contraction *1/4"* Spacing of joint—Expansion *Variable* Contraction *15 feet*

MIXING PLANT: Central or moving ...... Mixer, type *Rex 27-E*

Capacity *8 sacks* RPM *16* Time of mix *1 min.*

CURING: Opened to traffic, stations ......

Covering, stations ...... Watering, stations ......

NUMBER MEN: Mixing *5* Spreading and finishing *5* Sprinkling ...... Covering *1*

TIME OPERATED: *4 hours* WEATHER: *Fair*

CYLINDERS: Total cast this date *4*; Set No. *36*; including *4* cyls. at sta. *915*, ...... cyls. at sta. ...... cyls. at sta. ......, ...... cyls. at sta. ......, and ...... cyls. at sta. ......

| QUANTITIES | Previous | Today | Total |
|---|---|---|---|
| Pavement, sq. yds. | 15,214 | 595 | 15,809 |
| Driveways, sq. yds. | | | |
| Sidewalks, sq. yds. | | | |
| Curb and gutter, lin. ft. | | | |
| Dowels | 275 | 11 | 286 |
| Tie bars | 5,852 | — | 5,852 |
| Exp. Jt., lin. ft. | 120 | — | 120 |
| Cont. Jt., lin. ft. | 8,832 | 348 | 9,180 |
| Sacks deducted | | | |

| QUANTITIES | Previous | Today | Total |
|---|---|---|---|
| Cement, sks. | 20,208 | 876 | 21,084 |
| Cement, sks. | | | |
| Cement, sks. | | | |
| Cement, sks. | | | |

Cement count OK *(signed)* Contractor

REMARKS:

*(signed)* Inspector

STATE PRINTING DEPT.

MATERIALS DEPARTMENT COPY

Form 87FF

MATERIALS DEPARTMENT—OREGON STATE HIGHWAY COMMISSION

## DAILY PLANT REPORT—BITUMINOUS MIXTURES

Section *Albany-Crabtree Corner* Prefix *22-1114*

Highway *Santiam* County *Linn*

Contractor *Warren Northwest, Inc.* Contract No. *2726* Date *Aug 6, 1945*

TYPE OR CLASS OF MIX / SPECIFICATIONS

| Percent Mix Pass. | On | Dust | | Bin 1 (24%) | | Bin 2 (26%) | | Bin 3 (44%) | | Bin 4 | | Total On | % | Mix % Range | | Sand Grading Sieve | Specification | | Mix % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/2 | 1/4 | | | | | 4 | 1.1 | 78 | 34.3 | | | 1/4 | 35.4 | 26 | 38 | | | | |
| 1/4 | 10 | | | 5 | 1.3 | 81 | 21.0 | 12 | 5.3 | | | 10 | 27.6 | 22 | 30 | | | | |
| 10 | 40 | | | 51 | 12.2 | 10 | 2.6 | 3 | 1.3 | | | 40 | 16.1 | | | 40 | 30 | 50 | 51.9 |
| 40 | 80 | | | 20 | 4.8 | 2 | .5 | 1 | .4 | | | 80 | 5.7 | 25 | 35 | 80 | 16 | 32 | 18.4 |
| 80 | 200 | | | 16 | 3.8 | 1 | .3 | 3 | 1.3 | | | 200 | 5.4 | | | 200 | 16 | 32 | 17.4 |
| 200 | | | | 8 | 1.9 | 2 | .5 | 3 | 1.4 | | | Pass | 3.8 | 4 | 7 | Pass | 8 | 16 | 12.3 |
| | | | | | | | | | | | | A.C. | 6.0 | 5 | 8 | | | | |

TYPE OR CLASS OF MIX / SPECIFICATIONS

| Percent Mix Pass. | On | Dust | Bin 1 | Bin 2 | Bin 3 | Bin 4 | Total On | % | Mix % Range | Sand Grading Sieve | Specification | Mix % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |

DISPOSITION OF MATERIAL / TIME ANALYSIS

| Type Mix | Tons Mixed | Tons Rejected Road | Tons Rejected Plant | Tons Used | Placed on Road Sta. to Sta. | Sampled at Sta. | Mixed As | Tons | Used As | Hours Delay Plant | Road | Weather | Total | Hours Operated Today | Previous | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| "B" | 661½ | | 1½ | 660 | 347+30-390+50 | 375 | | | | | | | | 11 | 186 | 197 |
| Total | | | | | | | | | | | | | | | | |

Remarks: *Material passing No. 200 slightly low*

| TEMPERATURE | Max. | Min | Ave. |
|---|---|---|---|
| Mix | 360 | 255 | 270 |
| Agg. | | | |
| Asph. | | | |

White copy to engineer of materials
Blue copy to division engineer
Yellow copy to resident engineer

Signed: *(S) P.G. Deuber* Plant Inspector

## SECTION 14. PROJECT AUTHORIZATIONS, EXTRA WORK, ETC.

*Article*

1. General.
2. Price Agreements.
3. Extra Work.
4. State Force Work (Contract Jobs).
5. Authority for Additional Expenditure.
6. Industrial Ratings for Highway Work.
7. Contractor's Industrial Accident Ratings.
8. Record of Project Expenditure Authorization.
9. Contractor's Equipment Rental Rates.
10. Orders Required for Service to be Rendered Counties, Cities, Etc.
11. Billing Procedure for Amounts to be Collected from Counties, Cities and Others.
12. Procedure for Furnishing Materials to Contractors.

### PROJECT AUTHORIZATIONS, EXTRA WORK, ETC.

#### Article 1—General

Extra work to be performed or extra material to be furnished, which has not been provided for and included in the original contract agreement, must be authorized and paid for as a price agreement, on a cost plus basis, or by state forces.

(a) Authority for such additional work or material must be secured by the written approval of the Division Engineer, Construction Engineer and the State Highway Engineer, before it will be permitted to proceed in the field.

(b) The forms used for authorization of extra work and material are, for the most part, self-explanatory and complete in themselves. However, it is to be particularly noted that each form must be complete in detail before approval will be granted.

(c) Every care must be exercised to estimate accurately the cost and quantity of the work to be performed. If, at any time, the cost is in excess of the original amount authorized for any particular order, a request for an additional authorization shall be submitted, accompanied by an explanation of the overrun.

(d) Each order shall include, in the space provided, a brief but comprehensive explanation concerning the work to be performed, setting forth the reason making it necessary to perform the work and stating why it is classed as extra work.

(e) Authorization data shall be supplied on each order and a request made for any additional amount necessary to cover the cost of the work proposed by the order.

(f) When two or more Federal Aid units or projects are included under one contract, reference shall be made in the heading on the form under "F. A. Project No." only to the project or projects to which the work applies.

(g) Field Engineers *must* obtain advance approval of extra work and state force work on contract projects.

In emergency situations, consent to proceed with the work in advance of approval of the order may be obtained by telephone. Such consent must, however, include the consent of the Public Roads Administration, if the work is on a federal aid project or other project in which the federal government is concerned.

*The Federal Government does not participate in the cost of work which has not had advance approval of the PRA. This is important and doubly so on access road projects, flight strip projects and other projects not on the State Highway System.*

Field Engineers are cautioned, also, that on federal projects not on the State Highway System there *must be* no overrun of the *original* authorization for the project. The Federal Government will not make reimbursement beyond the amount of the *original* authorization. Additional expense, and overruns which cannot be absorbed in the contingency allowance, must be paid for with State moneys. No State money is available for such purpose.

When work is started, or is to be started before the order for it is approved, the order must have stated upon it the date on which the work was started, or is to be started, and the dates on which the advance approvals of the Department and of the PRA were obtained.

Division Engineers must see to it that the foregoing instructions are carried out and must check all orders to see that they are properly and adequately prepared and that they have shown upon them the beginning dates and advance approval dates called for by the preceding paragraph. Division Engineers will be held strictly responsible for the carrying out of this order.

#### Article 2—Price Agreements (Form A-169)

(a) Recommendations for extra work, materials to be furnished or purchased, or other items, to be performed and paid for under price agreement, including substitutions in contract items, cement adjustments, etc., shall be submitted for approval on Form A-169.

(b) Six copies of the form shall be prepared, and after the signature of the contractor has

been obtained, all copies (including the original) shall be submitted to the Division Engineer. After approval by the State Highway Engineer, approved copies will be sent to the Contractor, the Division Engineer and the Resident Engineer. The original copy will be filed with the copy of the contract in the Salem office and one copy will be retained by the Office Engineer's Department.

(c) An accurate and complete description of the work to be done and the location by station numbers shall be included on the form. The name of the pay item, unit of measurement, estimated quantities and agreed unit price, shall be listed in the space provided, and listed in the same manner as comparative items are listed in the regular contract.

(d) *Specifications, Basis of Measurement, Pay Item, Etc.*—Definite reference shall be made to specifications, basis of measurement, and other provisions relative to performance of the work.

(e) In instances where a price agreement is submitted for approval, covering the purchase of excess material, cement adjustments, etc., which in accordance with the standard specifications are to be paid for on the basis of the actual cost to the contractor, copies of invoices *must* accompany the agreement to support the agreed unit prices.

Price agreements issued to establish the prices at which cement adjustments are to be made should include itemized estimates showing how the agreed prices are arrived at.

If the price paid the cement manufacturer is f. o. b. any point other than the site of the work, the freight charge, the overland haul expense and all other expense involved in getting the cement to the site of the work, must be shown.

If the contractor takes advantage of cash discount on his cement purchases, the discount item must be shown.

If the cement is delivered in cloth sacks, the sack refund item must be shown.

If the cement is delivered in bulk, or in non-returnable bags, this fact must be stated in the agreement.

The agreement must be accompanied by a copy of the manufacturer's invoices showing the price paid by the contractor for the cement used on the job and, if the contractor pays freight on the cement, a copy of the freight bill, also, must accompany the agreement.

Details in regard to the quantities of cement involved in the adjustment need *not* be shown in the agreement.

Division offices will check all cement adjustment price agreement for compliance with the foregoing instructions, before forwarding the agreements to Salem.

(f) Whenever necessary, in addition to and supplementary to the explanation on the form, a detailed explanation shall accompany the price agreement, stating pertinent information relative to the work prices, etc., which it covers. This explanation shall be included in the letter of transmittal. Quantities for price agreements will be listed on the Estimate Form and "Quantity Summary Sheet" under the respective headings.

### Article 3—Order for Extra Work (Form E-208)

(a) Recommendations for work, classed as extra work, and to be performed by the contractor on a cost plus basis, shall be submitted for approval on Form E-208.

(b) Six copies shall be prepared and submitted to the Division Engineer. After approval by the State Highway Engineer, approved copies will be sent to the contractor, the Division Engineer and the Resident Engineer. One copy will be retained by the Office Engineer's Department.

(c) This form shall include a brief and complete description of the work to be performed, a definite location by station numbers and, under "Estimate of Quantities and Cost", an estimate of cost, broken down to show costs for labor, materials and equipment, etc. (The estimate of cost will not be included on the *original copy* of the form. This copy, when approved, is forwarded to the contractor.)

(d) Particular care must be exercised to present an accurate estimate of the cost of the work. The amount authorized for this work will not exceed that made for the original request. When it appears that there will be an additional expenditure, it will be necessary to submit for approval a request for additional authorization, Form A-107 "Authority for Additional Expenditure", accompanied by an acceptable explanation for the over-run.

(e) Under "Explanation", a statement shall be included setting forth the reasons for the necessity of performing the work and why it is classed as extra work. When necessary, this information will be supplemented by a detailed explanation included in the letter of transmittal.

(f) Force account work will be paid for in accordance with Section 8 of the standard specifications. Pay rolls shall be prepared and signed by the contractor, or his representative, and shall be approved by the Resident and Division Engineers. All bills must be properly supported by copies of invoices and bear the approval of the Resident and Division Engineers.

(g) Force account bills will be submitted with the monthly estimate and accompanied by Form No. A-100, Record of Extra Work Bills.

(h) Form No. A-100 will be submitted in quadruplicate. Corrections will be made thereon and copies showing the corrected amounts will be returned to the Division Engineer and to the Resident Engineer. Corrections will be noted by the Resident Engineer and the corrected amounts used in preparing subsequent estimates.

(i) *Contractor's Payments Under State and Federal Acts*—In submitting force account bills for force account work performed, contractors may include the amounts paid by them under state and federal acts relating to "Social Security" and "Unemployment Compensation", as well as the amounts paid by them for state industrial accident insurance.

The contractor's payments under the Social Security Act for old age insurance amounts to 1.0 per cent of the gross amount of the labor pay roll.

The Contractor's payments under the Unemployment Compensation Act amount to 3.0 per cent of the gross amount of the labor pay roll.

In addition to allowance for the actual costs of these items, the contractor will be entitled to a "percentage allowance" of fifteen per cent of the actual cost, the same as is allowed on payments for industrial accident insurance and labor. (See Sec. 8-5 of Standard Specifications and Contract Agreement for State Highway Construction.)

The employee's contributions under the above-mentioned acts, which will amount to 1.0 per cent of the gross pay roll, need not be shown on the force account pay rolls, either as deductions or otherwise, as they neither increase nor decrease the cost of the work to the contractor.

### Article 4—Order for State Force Work (Applying to Contract Project) (Form A-105)

(a) Recommendations for work to be performed by state forces will be submitted on Form A-105. Written approval will be required from the Division Engineer, the Construction Engineer and the State Highway Engineer.

(b) Six copies of the form will be prepared and all copies submitted through the Division Engineer and Construction Engineer to the State Highway Engineer for approval. After approval by the State Highway Engineer, approved copies will be sent to the Division Engineer and the Resident Engineer. Two copies will be submitted to the Maintenance Engineer and one copy retained by the Office Engineer's Department.

(c) *List Estimate of Labor, Materials, Equipment*—A brief and complete description of the work to be performed shall be included on the form, and the location of the work shown by station numbers. The estimate of cost and quantities shall be listed to show labor, materials and equipment. It will be expected that the estimate of cost is reasonably accurate, and approval of the order will constitute authority for expenditure only of the amount authorized thereon. When at any time it appears that an additional expenditure will be necessary, a request for the additional amount required is to be submitted for approval, accompanied by an acceptable explanation for the over-run.

(d) *Explain Reason for Necessity of Work*—A brief but comprehensive statement shall be included on the form, in the space provided, setting forth the reasons for the necessity of performing the work, and why it is classed as extra work. Whenever the occasion requires, a detailed statement shall be included in the letter of transmittal, supplementing the explanation included on the form.

(e) *Other Bills Handled in Same Manner*—Bills submitted by public utilities or private companies for work done in connection with a construction project shall be handled in the same manner as "State Force Work".

### Article 5—Check Estimates for Possible Need of Increased Authorization

As soon as a construction job is well under way and each month thereafter, a careful check will be made of the original estimate to determine the probability of an over-run. Request for increased authorization shall be made as soon as over-run appears probable. These requests shall be made on Form A-107 "Authority for Additional Expenditure".

Form A-107 is to be prepared in triplicate. The form is self-explanatory and must be complete in detail before it will be approved. Every item or items responsible for the over-run is to

be listed, giving quantities and cost, and any offsetting saving is to be listed in the space provided.

### Article 6—Industrial Accident Ratings for Highway Work

From time to time the State Highway Engineer issues a statement giving the base accident insurance rates on the different classes of highway work. This statement is to be used in determining rates when submitting force account claims on State contracts and in connection with request for outside billing. Be sure you have the current statement of base rates when submitting force account claims.

### Article 7—Contractors Industrial Accident Ratings

A statement of contractors' experience ratings is issued at the same time, and for the same period, as the statement of industrial accident ratings for highway work. This experience rating is based on the proportion of the contractors' payments which is paid by the State Industrial Accident Commission to the contractors' injured workmen and is shown as base rate or as an addition to or deduction from the base rates.

Each engineer should make certain that extra work order claims, in connection with contracts under his supervision, show both the correct base insurance rate of the contractor and the contractors' experience rating as listed in the current statement. Contractors' percentage should be allowed on insurance in all cases of force account claims.

All questions in connection with these instructions should be referred to the Accounting Division at Salem.

### Article 8—Record of Project Expenditure Authorization

Form A-139 will be made up in the Salem office and transmitted to the Division and Resident Engineers.

This form is designed to permit accurate knowledge of all authorizations on a project. Entries shall be made each time an additional authorization is requested. The approved authorization shall also be shown when received from the Salem Office.

### Article 9—Contractor's Equipment Rental Rates

Whenever arrangements are made for the performance of force account extra work by a contractor, an agreement shall be reached, before the work starts, as to the rental rates to be allowed for contractor's equipment. The rates agreed upon shall be stated on the "Order for Extra Work".

Equipment shall be of modern design, in good working condition. If old, obsolete or inefficient equipment is placed on the job, it shall be the duty of the Resident Engineer to order its replacement with efficient equipment.

### Article 10—Orders Required for Service to be Rendered Counties, Cities, Etc.

Orders to provide service to counties, cities, etc., of the kinds mentioned below shall be issued on Form E-189, an "Order to Render Service."

(a) Work performed by survey parties or construction engineering crews under the supervision of the Construction Department.
(b) Work performed or materials furnished as a part of a state road contract or state bridge contract or supplemental to a state construction contract, under the supervision of the Construction Department or the Bridge Department.

*Handling of Requests Made to Field Engineers*—When counties, cities or others desiring service of the kinds referred to above make their requests to Division Engineers, Maintenance Superintendents or other Field Engineers, the requests should be transmitted by letter, through the Division Office, to the Maintenance Engineer, the Construction Engineer or the Bridge Engineer, as the case may require. If the request is to be granted, an order on Form E-189 shall be prepared in and issued from the Salem headquarters office of the department having control of the work to be done. They will be effective only when signed by the Staff Engineer or other engineer at the head of the department, or by his authorized assistant.

Orders will be numbered serially, each issuing office using a separate series of numbers and identifying its numbers by a prefix as follows:

| *Department* | *Prefix* |
|---|---|
| Maintenance Department | MD |
| Signing Department | SD |
| Traffic Department | TD |
| Construction Department | CD |
| Bridge Department | BD |

Copies of "Orders to Render Service" shall be distributed by staff engineer or department head having control of work to be done, as follows:

Original—To Office Engineer
Duplicate—Retained by Staff Engineer or Department Head

Triplicate—To Division Engineer
Quadruplicate—To Maintenance Superintendent or Resident Engineer.

Letters from Field Engineers transmitting requests for service should provide the following information:

1. Name and address of party desiring the service.
2. Name and title of person representing the party desiring the service.
3. Description and location of work to be done or materials to be furnished.
4. Estimate of quantities and cost.
5. Statement of reasons why department is called upon to render the service.
6. How payment for work is proposed to be made.
7. Amount proposed to be deposited as guarantee of payment.
8. Description of State work in conjunction with which proposed work could be done.

### Article 11—Billing Procedure for Amounts to be Collected From Counties, Cities and Others

Whenever materials are furnished or service is rendered by the Highway Department to or for a County, City or other "outside" party it shall be the responsibility of the Staff Engineer or Department Head who is in charge of the Department by which the materials are furnished or by which the service is rendered, to submit to the Accounting Division, a "Request for Outside Billing" on Form A-191.

It will be the responsibility of the supervisory employee in direct charge of the rendering of service or the furnishing of materials to keep accurate account of the quantities and costs involved and to promptly submit that information through the proper channels to the Staff Engineer or Head of Department, as a basis for the request for billing above referred to.

The Accounting Division, will prepare the invoices to be sent to the payer in every case and the writing up of invoices at other offices will not be permitted. The submitting of the invoice to the payer and the "follow up" to obtain payment, shall be understood to be the duties of the Accounting Division, except in those cases handled by the Legal Department.

*The following detailed instructions are to be followed by Field Offices in preparing and submitting Statements of Quantities and Costs to be used as a basis for preparing "Requests for Outside Billing"*—(a) Submit one copy of Form A-191, "Request for Outside Billing" to Staff Engineer, through the Division Engineer, being careful to fill in all blanks. This copy is for informational use only, as the official copies to be submitted to the Accounting Division, will be prepared in the office of the Staff Engineer or Department Head.

(b) The itemized statement shall show complete information, including actual costs of labor, equipment, materials, and supplies, as follows:

1. Inclusive dates or date on which the work was performed.
2. Days or hours worked, and classifications and rate for men employed.
   (a) In computing the wage to be charged for monthly men, the daily rate will be 1/25 of the monthly rate, and the hourly rate 1/8 of the daily rate. This is to charge a just share of the Sunday and holiday salary to the work.
   (b) Men working at an hourly rate will be charged for at the same rate or rates as shown on the pay roll.
   (c) Vacation and sick leave percentages shall be charged at the regular current rates.
   (d) Industrial Accident Insurance shall be charged at the current rate applying to the particular type of work performed.
3. Rental for equipment shall be charged on a shift basis. Show the equipment number and the number of shifts.
   (a) Nondepreciated rental rates shall be used.
   (b) The rental rate to be charged for equipment for which there is no established shift rental rate shall be 1/25 of the monthly non-depreciated rental rate.
4. Materials, including asphalt, crushed rock, lumber, cement, etc., shall be listed in detail showing quantity, unit, unit price, and amount, plus an item adding ten per cent of the material costs. This ten per cent charge is to cover shrinkage and loss of materials sustained in handling and should be shown as a separate item.
   (a) For asphalt used from State barrels, the charge will include the following: freight; cost of asphalt; ten per cent of the cost of asphalt and freight for shrinkage and loss in handling; a flat charge of $2.00 per ton to cover the cost of heating, barreling, stockpiling, use of barrels and use of stockpile site.
   (b) For asphalt sold from State storage sumps, the charge will include the following: freight; cost of asphalt; ten per cent of cost of asphalt and freight for shrinkage and loss in handling; a flat charge of $2.00 per ton to cover the cost of unloading into the sump, use of the sump and cost of removal from sump.

(c) For asphalt sold to outside parties in their barrels, at the time of unloading and hauled by them, the charge will include the following: freight; cost of asphalt; ten per cent of cost of asphalt and freight for shrinkage and loss in handling; a flat charge of $1.00 per ton to cover the cost of heating and barreling.

5. Supplies, including gas, oil, grease, stove oil, kerosene, etc., shall be listed in detail showing quantity, unit, unit price and amount, plus an item adding ten per cent of the cost of supplies. This ten per cent charge is to cover the shrinkage and loss of supplies sustained in handling and should be shown as a separate item.
6. Aggregates are to be charged for at actual cost (not the standard price set for aggregates used on our own work).

(c) To cover the expense of supervision, general administration, and overhead, add a charge of ten per cent of the total cost on all work performed for outside parties, including repairs to damaged structures when the cost is to be received from the responsible party. This charge will be made in addition to the ten per cent charged for handling materials and supplies. It is to be shown on the next line below the total cost, and labeled "Plus ten per cent for Overhead".

(d) It is the purpose when billing for work performed for outside parties to charge them as nearly as possible the actual cost of performing the work. Field Engineers should never attempt to make the bill equal the exact amount of an advance deposit or some previous estimate, but should prepare the statement for actual expense data. In small projects where a lump sum estimate is used the fact should be indicated; but, in general the practice of showing lump sums should be avoided.

### Article 12—Procedure for Furnishing Materials to Contractors

The procedure described below is to be followed in cases where the Department undertakes to furnish to a contractor, asphalt, steel or other materials which, under the terms of the contract, should be furnished by the contractor.

*Evidence of Authorization*—As evidence of authority to furnish the materials, the Resident Engineer will prepare and submit, in the usual manner, an "Order for State Force Work" (Form No. A-105). On this order, the work to be done will, of course, be described as the furnishing of the material.

This order must be submitted even though the furnishing of the materials has been authorized previously by letter or telephone.

*Submission of Requisition*—To obtain the materials for the contractor, the Resident Engineer will submit a requisition in the usual manner, stating on the requisition that the material is for the contractor, and that the cost is to be deducted from the contractor's earnings. In the cost distribution on the requisition, the prefix should be the prefix of the project on which the material is to be used, and the *account number must be the number 202. The use of number 202 is important,* as that number is used only for items chargeable to the contractor and acts as a flag to prevent any possibility of collection from the contractor being overlooked.

In case arrangements for shipment of the materials are made through the Salem Office by telephone or other means prior to the issuance of a requisition, a requisition to confirm the order is to be issued by the Resident Engineer with clear indication that the requisition is in confirmation of the previously placed order.

*Showing on Monthly Estimate Sheets*—In order that proper charge may be made against the contractor for the materials furnished him, the Resident Engineer will list on each monthly or final estimate the quantities of materials furnished to the contractor to the date of the estimate. This listing of the materials shall be done on the back of the estimate sheet, in the space headed "Statement of Deduction Items."

Charge to the contractor for materials furnished by the State shall be made before, or at the same time, payment is made to the contractor for the contract items in connection with which the materials furnished are used.

Freight on materials furnished, if paid by the State, shall be listed on the backs of the estimates in the same manner as materials.

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For materials carried in Equipment Department storerooms, such as spring brackets and signs, the above-described procedure need not be followed. Instead, the materials may be requisitioned from the storeroom with instructions to the storeroom to charge the expense to the contractor, giving the name of the contractor and the contract number.

Materials (except signs) are to be furnished to contractors only in cases of unusual emergency, and, then, only with the advance approval of the Chief Engineer.

Form A-169—4M—9-43

(SAMPLE COPY)
(CEMENT ADJUSTMENT)

OREGON STATE HIGHWAY DEPARTMENT

## PRICE AGREEMENT

APPLYING TO EXTRA WORK AND EXTRA MATERIAL

Project Name Bear Canyon Date August 29, 1938
Highway Pacific Contract No. 2039
County Jackson Prefix 15-1118
Contractor Harold Blake F. A. Project No. 190-I (1)
Address 400 N. Thompson St., Portland, Oregon Price Agreement No. 2

For the below described extra work or extra material to be performed or furnished under the contract above referred to, the contractor agrees to accept payment at the prices given herein, understanding that, except as herein otherwise provided, the work is to be performed and the material is to be furnished in accordance with the specifications which form a part of the contract and in accordance with the instructions of the engineer

Work to be done: To establish net price per barrel for cement, based on actual cost per barrel F.O.B. the job site.

Locations by station numbers:

666+44 - 3 x 3 box
694+79 - 4 x 4 box

Names of pay items, estimated quantities and agreed price:

| | |
|---|---|
| Santa Cruz Portland Cement F.O.B. Project | $ 2.92 per Bbl. |
| Less sack refund | .40 " " |
| Less cash discount | .10 |
| | $ 2.42 |

Specifications, basis of measurement and other provisions:

Cement adjustment as provided for under "Measurement and Payment" in Section 31, Paragraph 38, of the General Specifications for the contract.

INSTRUCTIONS

After the signature of the contractor has been obtained, submit six copies (including original copy) to the Salem Office. After approval by the State Highway Engineer, approved copies will be sent to the Contractor, the Division Engineer, and the Resident Engineer.

Total Original Authorizations $ 101,875.40
Total Authorizations to Date $ 101,925.40
Additional Authorization Requested $ ——

Submitted by: Resident Engineer
Signed: Contractor
Approval Recommended: Division Engineer
Approval Recommended: Construction—Bridge—Engineer
Approved: State Highway Engineer

STATE PRINTING DEPT

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Form A-169—4M—9-43

(SAMPLE COPY)

OREGON STATE HIGHWAY DEPARTMENT

## PRICE AGREEMENT

APPLYING TO EXTRA WORK AND EXTRA MATERIAL

Project Name Halsey-Harrisburg Date April 10, 1945
Highway Pacific East Contract No. 2686
County Linn Prefix 22-1111
Contractor Porter W. Yett F. A. Project No. SN-U-FAP 56-G (1)
Address 6500 NE Ainsworth St., Portland 13, Oregon Price Agreement No. 6

For the below described extra work or extra material to be performed or furnished under the contract above referred to, the contractor agrees to accept payment at the prices given herein, understanding that, except as herein otherwise provided, the work is to be performed and the material is to be furnished in accordance with the specifications which form a part of the contract and in accordance with the instructions of the engineer.

Work to be done: At the site of the four bridge structures which are within the limits of the project, furnish and place "Selected Gravel Material" for embankment and filling the imcompleted westerly portion of approaches to bridge ends. This material being required to stabilize the subgrade, under traffic, before placing "Portland Cement Concrete Base."

Locations by station numbers:

1103+37 and 1105+12; 1139+49 and 1139+91; 1190+30 and 1191+98; 1282+71 and 1283+34.

Names of pay items, estimated quantities and agreed prices:

Selected Gravel Material 600 cu. yds. at $1.25 - $ 750.00

Approved by Tom Davis, P.R.A., by telephone on April 10th.

Specifications, basis of measurement and other provisions: It is agreed that the "Selected Gravel Material" will be obta ined from a gravel bar in or near Harrisburg, Ore. The contractor, himself, shall acquire the right to take the material from the source or sources and shall bear all expense involved. Measurement of the material is to be made in the hauling vehicles at the point of deposit. It is understood that the State will maintain the bridge approaches after the material is in place. WORK HAS BEEN STARTED.

INSTRUCTIONS

After the signature of the contractor has been obtained, submit six copies (including original copy) to the Salem Office. After approval by the State Highway Engineer, approved copies will be sent to the Contractor, the Division Engineer, and the Resident Engineer.

Total Original Authorizations $ 414,355.96
Total Authorizations to Date $ 414,355.96
Additional Authorization Requested $ None

Submitted by: Resident Engineer
Signed: Contractor
Approval Recommended: Division Engineer
Approval Recommended: Construction--Bridge--Engineer
Approved: State Highway Engineer

STATE PRINTING DEPT

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Form E-166—5M—5-41

OREGON STATE HIGHWAY DEPARTMENT

(SAMPLE COPY)

## ORDER FOR EXTRA WORK

TO BE PERFORMED ON FORCE ACCOUNT BASIS

Project Name Halsey-Harrisburg Section Date, May 15, 1945
Highway Pacific East Contract No. 2686
County Linn F. A. Project No. SN-U-FAP 56 G (1)
Contractor Porter W. Yett Order No. 2
Address 6500 NE Ainsworth St., Portland, Oregon

The following work is hereby classified as "Extra Work", to be performed and paid for in accordance with the terms of contract.

Description of work to be done:

Remove concrete curb in front of Patapoff Feed and Seed store property in Halsey.

Remove small concrete island which is a part of the sidewalk in front of the Robins Garage.

Location by station numbers:

Curb: Left and opposite station 907+90

Island: Left and opposite station 909+20

Estimate of quantities and cost: Equipment rental rates are based on OPA ceiling prices, gross.

| | | | | |
|---|---|---|---|---|
| 1 Compressor (160 cu.ft.) | 1 day | at | $15.50- | $15.50 |
| 2 Pav't breakers | 1 " | " | 3.50 | 7.00 |
| 2 Air hose (50'long) | 1 " | " | 1.50 | 3.00 |
| 4 Gads | 1 " | " | .21 | .84 |
| 1 1½ T. Truck | 4 hrs." | | 2.50 | 10.00 |
| Total | | | | 36.34 |
| Plus 5% | | | | 1.82 |
| Total Equip. Rental | | | | $38.16 |

| | | | | |
|---|---|---|---|---|
| 4 Jackhammer Opr. | 32 hrs. | at | $1.25- | $40.00 |
| 1 Truck Driver | 4 " | " | 1.10 | 4.40 |
| Total | | | | 44.40 |
| Plus 15% | | | | 6.66 |
| Total Labor | | | | 51.06 |
| Total Equip. Rental | | | | 38.16 |
| Total Est. | | | | $89.22 |

(Common Labor not available)

Explanation: (Explain here the conditions which cause this work to be classed as "extra work")

The above is a part of easement agreements covering proposed frontage improvements in the town of Halsey.

Tentative approval obtained from T. M. Davis of P.R.A. by phone on 5/17/45.

(WORK HAS NOT STARTED)

INSTRUCTIONS: A single order should not cover more than one class of work or more than one extra work job.

Submit six copies of the order to Salem. After approval of the order by the state highway engineer, the Salem office will send one copy to the contractor, one to the division engineer and one to the resident engineer.

Total Original Authorizations $ 414,355.96
Total Authorizations to Date $ 415,105.96
Additional Authorization Requested $ None
Additional Authorization Approved $

Submitted by: Resident Engineer
Approval Recommended: Construction—Bridge—Engineer
Approval Recommended: Division Engineer
Approved: State Highway Engineer

STATE PRINTING DEPT.

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Form A-105—5M—9-42

(SAMPLE COPY)

OREGON STATE HIGHWAY COMMISSION

## ORDER FOR STATE FORCE WORK

APPLYING TO CONTRACT PROJECTS

Project Name Halsey-Harrisburg Date Sept. 23, 1944
Highway Pacific East Contract No. 2686 F. A. Project No. SN-U-FAP 56G (1)
County Linn Prefix 22-1111 Account No. 234

Description of Work:

Blade out lead ditches through fields outside of Right of Way

Location by Station Numbers:

Lead ditches right and opposite stations 950+31, 1067+58, 1240+00, 1296+50, 1326+50 and 1336+04.

Estimate of Quantities and Costs:

| | | |
|---|---|---|
| Rental on power grader | 5 days at $2.40 | $12.00 |
| Power grader operator | 5 days at 6.56 | 32.80 |
| Gas and oil | | 17.50 |
| | Total | $62.30 |

Explanation:

Blading out of lead ditches through fields outside of the right of way is necessary in order to give constructed borrow ditches proper drainage.

INSTRUCTIONS

Submit a separate order for each piece or kind of state force work to be undertaken. Use the account number applying to that work as indicated in the account numbers assigned to state force work on contract jobs.

Five copies of the order are to be submitted to Salem. After approval by the State Highway Engineer, one copy will be sent to the Division Engineer and one copy to the Resident Engineer

Total Original Authorizations $414,355.96
Total Authorizations to Date $414,355.96
Additional Authorization Requested $ None
Additional Authorization Approved $

Submitted by: Resident Engineer
Approval Recommended: Construction—Bridge—Engineer
Approval Recommended: Division Engineer
Approved: State Highway Engineer

This order does not constitute authority for expenditures until approved by the State Highway Engineer

STATE PRINTING DEPT

Form A-191—Rev. 5-43 (SAMPLE COPY)

This copy for:
Contractor ☐
Division Engineer ☐
Resident Engineer ☐
Salem Office ☒

OREGON STATE HIGHWAY COMMISSION

# RECORD OF EXTRA WORK BILLS

To accompany:
Estimate No. 10
Contract No. 8686

Bills submitted with this month's estimate.

Bills previously submitted but which have not been paid nor otherwise disposed of.

| Extra Work Order No. | Bill No. or Other Identification | Amount of Bill as Submitted by Contractor | Amount of Bill as Approved by Resident Engineer | Amount of Bill as Paid on This Month's Estimate | REMARKS (Note-Resident Engineer will make no entries on right half of this sheet.) |
|---|---|---|---|---|---|
| 1 | Payroll | $731.85 | $731.85 | | |
| 2 | Payroll | 109.44 | 109.44 | | |

Resident Engineer

Mail Address

Total amount of force account paid this estimate.

Total previously paid.

Total payments on force account work.

## INSTRUCTIONS

Beginning with the first monthly estimate with which extra work bills are submitted, each and every monthly estimate shall be accompanied by a report on this form. Resident Engineer shall submit four copies to Salem Office, retaining one copy for his files. Salem Office, after supplying information so to bills passed for payment, will send one copy to Contractor, one to Division Engineer, and one to Resident Engineer, retaining the fourth copy.

Resident Engineer will indicate division between bills submitted with this month's estimate and bills previously submitted by drawing heavy horizontal line across left half of sheet.

STATE PRINTING DEPT

Form A-181—5-43 (SAMPLE COPY)

OREGON STATE HIGHWAY COMMISSION

# AUTHORITY FOR ADDITIONAL EXPENDITURE

APPLYING TO CONTRACT JOBS

Job: Dee-Woodworth Acres — Date: March 18, 1942
Highway: Hood River Secondary — Job Prefix: 114-1006
County: Hood River — Contract No.: 2480
Contractor: Rogers Construction Co. — Authorization No.: 1

Description of Additional Work to Be Done or Additional Expense to Be Incurred Together with Reasons Therefor:

Overrun in Project cost.

| Estimate of Quantities and Cost: | Authorization | Expended | Overrun & Underrun |
|---|---|---|---|
| Payments to Contractor: | | | |
| Original contract items | $51,858.50) | | |
| Contingency allowance | 2,079.54) | | |
| Additional authorization | 100.00) | $54,733.54 | $+ 696.70 |
| State Force Work | | 767.97* | + 767.97 |
| Subtotal, Construction | $54,036.84 | $55,501.51 | $+ 1,464.67 |
| Engineering | 5,117.51 | 5,386.78 | + 169.27 |
| Total | $57,154.35 | $58,788.29 | $+1, 633.94 |

Description and Estimate of Cost for Any Offsetting Savings to Be Made:

* Includes anticipated expenditure taken from final Quantity Summary Sheet.

## INSTRUCTIONS

Submit three copies to Salem. After approval by the State Highway Engineer, one copy will be sent to the Division Engineer and one copy to the Resident Engineer.

This form does not constitute authority for additional expenditure until approved and returned.

Total original authorization $ 57,154.35
Total present authorization 57,154.35
Additional authorization requested 1,650.00
Additional authorization approved

Request made by: Resident Engineer

Recommended for Approval: Division Engineer

Recommended for Approval: Construction Engineer

Approved: State Highway Engineer

STATE PRINTING DEPT

Form E-189—3M—4-41 (SAMPLE COPY)

Oregon State Highway Commission

# ORDER TO RENDER SERVICE

(Or to Furnish Materials)

Party Requesting Service: Oregon State Board of Control — Order No. 1

Date June 26 1945

By: Roy H. Mills, Secretary (Official capacity)

Prefix and account number to which work is to be charged 20-1469

Description and Location of Work To Be Performed or Materials To Be Furnished:

Make survey, prepare maps, plans and specifications of the University of Oregon Athletic Field.

Estimate of Quantities and Cost:

Lump sum estimate $500.00

Basis of Payment:
☐ Monthly payments
☒ Single payment on completion of work
☐ Other basis as follows:

Amount of advance deposit (if any) $

Deposit received by Secretary on

Authority from Requisitionist:
☐ Agreement dated
☐ Letter to date
☒ Oral request to McCullough date June 15, 1945

Department Authority:
☐ Order of Highway Commission
☒ Order of State Highway Engineer
☐ Head of department issuing order

Field information submitted by B. A. Martin in interest Phone call 6/20/45

Expected date of completion of work or delivery of materials July 15 1945

Superintendent or engineer responsible for performance of work and submission of information for billing B. A. Martin

Record of billing requests:

| Number | | | |
|---|---|---|---|
| Date | | | |
| Amount | | | |

Order prepared by Construction Department

Signed (s) Edwin A. Pease

Construction Office Engineer

Instructions: Department head or staff engineer approving order will send original copy to Office Engineer and will retain duplicate copy. He will also send copies to interested division engineer, resident engineer and/or maintenance superintendent.

STATE PRINTING DEPT

Form A-181—3M—8-43

OREGON STATE HIGHWAY COMMISSION

# REQUEST FOR OUTSIDE BILLING

(Or Advice of Cash Transaction)

Address invoice to: S. Simms, Sweethome, Oregon

Request No. (assigned by staff engineer or head of department) CD-3

Date 12-21-44

Payer's Order No. (if any)

Attention of

Department Order No. (if any) (Number of "Order to Render Service")

Description and Authority: (Describe the service rendered, stating kind of service, location, etc. Also refer to agreements, letters and orders by which payer authorized the service.)

Sale of State Highway Spiral Manual to outside party

Itemized Statement:

| Quantity | Unit | Description | Unit Price | Amount |
|---|---|---|---|---|
| 1 | only | Oregon State Highway Department Spiral Manual | $1.41 | $1.41 |

Has payer made payment for this service? Yes
If so, what is amount of payment? $1.41
Has payer made a deposit with the department to guarantee payment? Yes
If so, what is amount of deposit? $1.41
Is this a partial or final request for billing? Final
Have there been any previous requests for billing in connection with this same service? No
If so, give total of all previous requests $
Also give number of last previous request

Credit distribution: 5015-900

Submitted by: Construction Department

Approved:

Division Engineer

Approved: (s) Edwin A. Pease

Department Head or Staff Engineer

Instructions: The original and duplicate copies shall be forwarded through the division engineer to the staff engineer or department head. Staff engineer or department head will forward original copy to the accounting division through the office engineer. Additional copies shall be prepared for and retained by the division office and other field offices concerned. If the request is to be accompanied by a payment, an additional copy shall be submitted for the use of the accounting division.

STATE PRINTING DEPT.

## SECTION 15. MATERIALS AND TESTS

*Article*

1. Department of Tests.
2. Laboratory Responsible for Mixes.
3. All Materials of Construction to be Tested.
4. Sample Data Sheet.
5. Check Aggregate in Field for Proper Grading.
6. Send Samples of Material in From Along Proposed Routes.
7. Contractor Not to Remove State Materials.
8. Certify Materials Removed on Royalty Basis.
9. Test Pits and Tunnels.
10. Submit Report on Material Sources on Proposed Projects.
11. Prohibition on Use of Certain Materials From Outside of Oregon.

### MATERIALS AND TESTS

#### Article 1—Testing Laboratory

The State Highway Commission maintains a fully equipped testing laboratory under the direction of the Engineer of Materials. Headquarters for this Department are in Salem.

#### Article 2—Laboratory Responsible for Mixes

It is the responsibility of the laboratory to design and control all concrete and oil or asphalt mixes on construction projects.

#### Article 3—All Materials of Construction to be Tested

No material will be used in highway or bridge construction without a written or verbal recommendation from the testing laboratory. When material must be used before testing is completed, special instructions will be given regarding the same. Eliminate all guess work regarding road materials and depend on recognized and standardized tests for your information and guidance. Follow these instructions carefully, especially regarding sampling of material, for the test is of little value—in fact sometimes misleading—unless the sample is taken intelligently and systematically.

All construction materials obtained on purchase order must be tested and approved by our laboratory before payment of the invoices can be made. It is necessary, therefore, that the Accounting Division withhold payment in each instance until a full report is received from the laboratory.

Because of the above facts and because of the necessity for making payments to vendors as promptly as possible it is necessary that samples be promptly submitted to the laboratory or that an inspection (in those cases where an inspection is necessary) is made promptly.

Sampling of materials is fully covered in Technical Report No. 43-2 "Manual of Standard Practice for Sampling Construction Materials".

#### Article 4—Sample Data Sheets

The standard Form E-71 must be filled out completely in triplicate. One copy should be forwarded through the mail to the Engineer of Materials immediately, the duplicate to the Division Engineer and retain the triplicate for the Resident Engineer. In case the Engineer has no form sheets, he should give all the information on plain stationery and mail to the Engineer of Materials. However, he should requisition the Materials Department for the form.

Care should be taken in filling out the Sample Data Sheet, Form E-71, giving all the information relative to the sample of material submitted which might be of value in considering the material for use.

The name of the project should always be given. This should be the name of the contract project, the bridge name and number, or the section name for maintenance work. The highway name and number, county, and the prefix should be given whenever a prefix has been assigned. Use only the prefix for the project upon which the material is proposed for use. This prefix is used as the basis for distribution of costs, the index for project files, and for checking tests against materials used on each project. The name of the contractor should be given wherever work is under contract. If the project is to be contracted but not yet awarded, the expression of "not yet let" or "to be contracted" should be used. On all state force account jobs, the term "State Forces" should be used. Address of the submitter of the information should be his mail address, and this will be used in mailing report on the test. If the sampler of the material is other than the submitter, his name and title should be given. If the sampler of the material is other than a state representative this information should be clearly marked.

Please classify the material as to general type of material, stating definitely how the material is to be used. Under "Purpose of Test" special tests should be named if they are desired. Specifications under which the material is to be used should be noted. In giving the source of the sample do *not* give station numbers

but give accurate and definite information by mile numbers, or the distance and direction from a fixed landmark. If the sample is not taken at the original source, give both sources. For example, crushed rock might be from maintenance stockpile at mile 82, Pacific Highway, original source from the Shedd quarry. If the material is a manufactured product, such as expansion joints, cement, oil, etc., do not fail to give the brand or manufacturer's name, together with the actual source of the sample taken. Any information regarding previous tests will assist the laboratory in checking results. The quantity of material represented has reference to the quantity of the material and not to the size of the sample. For pavement samples, all the blanks should be filled, together with whatever other additional information is obtainable.

When samples of bituminous mixtures are submitted, Form E-76 may be used. This form is especially adapted to give the information necessary on this type of sample and should be used by all state paving plant foremen and bituminous inspectors assigned by the Engineer of Materials in submitting samples of bituminous mixtures.

### Article 5—Check Aggregate in the Field for Proper Grading

It is as important that aggregates manufactured under contract or purchased from commercial plants, especially aggregates to be used in oiling, bituminous macadams and pavements, meet our gradation standards as it is for them to meet the other requirements.

Each Resident Engineer having rock production projects shall provide himself with a set of standard testing screens and scales and daily screen tests shall be made. If the materials do not meet the requirements, as set forth in the contract specifications, the materials shall be rejected, the contractor or his representative immediately notified and the plant adjusted until they do meet the requirements.

The Division Engineer shall make frequent inspections to see that the aggregates meet standard requirements in every respect.

As the department has only a limited number of sets of screens and scales, Resident Engineers are to turn in their screens and scales to the Equipment Engineer as soon as they are no longer needed, in order that they may be used elsewhere.

The Resident Engineer will be held responsible for obtaining aggregates that meet the department's standards in every respect.

### Article 6—Send Samples of Material in From Along Proposed Routes

Samples of stone or gravel along the route of a proposed highway which appear suitable for construction purposes should be sent in for tests.

### Article 7—Contractor Not to Remove State Materials

The contractor shall not be given permission to remain in the State quarries or to operate them for private purposes.

If contractors are to produce material for counties or cities, special arrangements shall be made by the Construction Engineer at Salem.

### Article 8—Certify Materials Removed on Royalty Basis

On construction projects where materials are acquired from private ownership on a royalty basis, it is important that a statement of the total quantities taken be prepared, and certified to, by the Engineer in charge of the work at the time the project is completed. This statement should then be approved by the Division Engineer and forwarded to the Construction Engineer without delay, in order that proper settlement may be made with the owner of the property.

### Article 9—Test Pits and Tunnels

(See Section 12, titled "Soils".)

### Article 10—Submit Report on Material Sources on Proposed Projects

Form 525 "Statement of Material Sources and Stockpile Sites", shall be used by the Resident Engineer in reporting material sources and stockpile sites. This form properly filled out in the field and submitted with location data will supply information which may otherwise be overlooked by the Division Engineer. Three copies of this form are required. (See 17-3.)

### Article 11—Prohibition on Use of Certain Materials From Outside of Oregon

Under Section 3 of Chapter 24, Oregon Laws of 1943, cement, sand, crushed rock, gravel and plaster, used on State construction work, must be of Oregon production or Oregon manufacture "in all cases where the bid prices of such materials are no greater than those of similar materials produced or manufactured outside of Oregon".

As responsibility for compliance with the section above referred to is placed on the Commission or Board, under whose supervision the work is performed, it will hereafter be the duty of the Resident Engineers and Division Engineers to see that no materials of the kinds mentioned, which have their source outside of Oregon, are used by contractors on State projects, unless, and until the contractor submits acceptable evidence that equally suitable materials of Oregon production or manufacture are not obtainable at the same or a lesser cost, and unless, and until, the use of the materials from outside of Oregon is specifically approved, in writing, by the State Highway Engineer or the Assistant State Highway Engineer.

Authority for action as above indicated will be included in all contracts for the class of projects to which the requirement applies.

The requirement herein stated applies only on State projects. It does not apply on federal aid projects or other projects financed in whole or in part with federal moneys.

Form E-71 10M Sets--7-43

Laboratory number

(Do not use this space)

OREGON STATE HIGHWAY COMMISSION
MATERIALS DEPARTMENT

Data Sheet

## SAMPLE DATA SHEET

№ 77458

Project Roots Creek - Siletz Section (Give name of section or bridge upon which material is to be used or from which sample is submitted) Prefix No. 121-1005 (This is important)

Highway Siletz Secondary County Lincoln

Contractor E.C. Hall Co. (Give name of contractor if work is under contract) Contract No. 2740 F. A. Project No. DA-RM 93(1)

Submitted by S.F. Walters Title Res. Engr. Address Newport

Identification of sample: 77458 (Preferably use sample number given at top of this sheet) Sheet No. 17 (Numbers for each job to begin with one)

Shipped Aug. 27 1945 (Date) By Auto Freight (Express, parcel post, freight) Approximate quantity 30 lbs.

Sampled by S.F. Walters Title Res. Engr. Address Newport

If sample submitted is of material to be used in construction or maintenance fill in following:

Kind of material 3"-0" Crushed Rock To be used in Surfacing (Bridge, culvert, pavement, macadam, surfacing) construction

What particular part of work Base Course (Case A, B or C concrete, piers, superstructure, top course, base)

Purpose of test Screen Analysis, Plasticity Index and Liquid Limit

Source of sample C.D. Johnson Quarry 1.5 mi. N. of MP 17.5 (Give as accurate a location as possible)

Sampled at MP 11.0

Has material from same source been tested previously Yes If so, give sample numbers 78397, Lab. No. 180993

Quantity of material represented by sample 2,000 cu. yds.

Average length of haul to job, by rail ; water ; overland

If sample is a paving sample taken from pavement in place, fill in following:

Kind of pavement Course

Location by station numbers

Date laid Date sampled

Remarks:

INSTRUCTIONS

This form is to be filled out and submitted whenever a sample of material or product is sent in for laboratory test or analysis. While sheet is to be sent to Engineer of Materials, Salem, Oregon, and blue to Division Engineer, except in the case of material for bridge construction when the blue copy is sent to Bridge Engineer, Salem, Oregon. Yellow sheet to be retained by inspector or field engineer. If the submitter of the sample is not the engineer in charge, the engineer should be notified at once that the sample is on route if the material is to pass special specifications. The sample should be sent directly to Engineer of Materials, Testing Laboratory, Salem, Oregon, and should be marked with the sample number appearing at the top of this page.

Respectfully submitted,

(S.) S.F. Walters

STATE PRINTING DEPT

Form E-71--5M Sets--7-42

Laboratory Number

(Do not use this space)

OREGON STATE HIGHWAY COMMISSION
MATERIALS DEPARTMENT

Data Sheet

## SAMPLE DATA SHEET
### Bituminous Mixture

№ 68026

Project Albany - Crabtree Corner Prefix No. 22-1114 (This is important)

Highway Santiam County Linn

Contractor or Foreman Warren Northwest, Inc. Contract No. 2726 Crew No. or F. A. No

Submitted by Paul G. Dauber Date July 19, 1945

Identification of sample: 68026 (Preferably use sample number at top of this sheet) Sheet No. 9 (Number for each job to begin with one)

Shipped July 19 1945 (Date) By Parcel Post (Express, parcel post, freight) Approximate quantity 7 lbs.

Sampled by Paul G. Dauber Title Inspector Address Salem

If sample submitted is a bituminous mixture fill in the following:

Type Asphaltic concrete (Asphaltic concrete, bituminous or oil macadam) Sample No. 9

Kind of Mixture Class "B" (Base, top, fine mix)

Brand of Asphaltic Cement Western Asphalt & Refining Co. Grade 61-70 (If asphalt give penetration)

Location by Mile Station No. 128, North side Date Laid July 19, 1945

Average Thickness 3 inches

Weather Cloudy

Remarks:

(Give condition of road being patched or paved and any other information that will be of value in checking work, such as mix used)

If sample is a cut sample from pavement in place, fill in the following:

Kind of Pavement Course

Location

Date Laid Date Sampled

Remarks:

Respectfully submitted,

(S.) Paul G Dauber

Mail Address: Salem

INSTRUCTIONS

This form is to be filled out and submitted whenever a sample of bituminous mixture or pavement is sent in for laboratory test or analysis. While sheet is to be sent to Engineer of Materials, Salem, Oregon, and blue to Division Engineer or Division Engineer as the case may be. The yellow sheet to be retained by plant foreman, resident engineer or inspector. If the submitter is not the resident engineer in charge, the engineer should be notified at once that sample is on route if the material is to pass special specifications. The sample should be sent directly to Engineer of Materials, Testing Laboratory, Salem, Oregon, and should be marked with the sample field number appearing at the top of this page

STATE PRINTING DEPT.

Form No. 858

OREGON STATE HIGHWAY DEPARTMENT

## Statement of Material Sources and Stock Pile Sites

(This statement to be prepared by Division Engineer and submitted in triplicate with Special Provisions to the Salem Office.)

Date June 4 19 45 County Malheur

Section Blue Hill Highway John Day

Length 9.23 miles. Limits Sta. 16+54 to Sta. 503+88

Type of improvement Maintenance Materials

Surveyed by John Doe Year 1945

SPECIFIED STOCK PILE SITES AND SOURCES OF MATERIALS

| Site No. | Used | New | Kind | Dist. Lt. | Dist Rt | Sta. | M P | Owner | Hwy Map File No. | Lab No. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | x | S.P. | | 400' | | 73.28 | L.M. Simpson | | |
| 2 | x | | S.P. | 50' | | | 75.16 | State of Oregon | | |
| 3 | | x | Q | | 150' | | 76.90 | O. L. Olsen | | |
| 4 | x | | S.P. | | 80' | | 79.20 | State of Oregon | | |

Q.=Quarry or Quarry Site; G. P.=Gravel Pit; G. B.=Gravel Bar; B. P.=Borrow Pit; T. D.=Talus Deposit; S. P.=Stock Pile Site; Adj.=Adjacent to.

ADDITIONAL DATA:

a. Descriptions and maps required for above submitted May 14 19 45

b. Hauling roads required? none Data submitted 19

c. Are all required sites included? Yes Balance when?

Signed

Division Engineer

NOTE Additional data and remarks should be made on the back of this report.

STATE PRINTING DEPT

## SECTION 16. EQUIPMENT AND PROPERTY CONTROL

*Article*

1. Board of Control to be Notified Before Engineer Leaves Department.
2. Stamped Approvals Not Accepted.
3. Requests for Mechanized Equipment.
4. Requisitions for Engineering Equipment and Supplies.
5. Transfer of Equipment on Rental Basis.
6. Transfer of Supplies and Equipment not on Rental Basis.
7. Equipment and Supplies not to be Transferred Without Approval.
8. Effective Date of Rental Charges.
9. Standard Stationery and Office Supplies.
10. Property Lost, Stolen, for Sale or Exchange.
11. Careless or Negligent Care of Equipment is Cause for Dismissal.
12. State Supplies and Equipment are not for Private Use.
13. Property Not to be Transferred Outside of Department.
14. Operation of Equipment.
15. Care and Time of Replacement of Tires.
16. Field Purchase of Tires.
17. Classes of Equipment Rental.
18. Charges for Upkeep, Repair and Operation.
19. Rental Rates.
20. Planometer Rental Rates.
21. Gas and Oil Purchases at State-owned Pumps.
22. Gas and Oil Purchases at Public Stations.
23. Storage of State Cars.
24. Do Not Park Cars on the Street for Long Periods.
25. Mileage for Use of Private Cars.
26. Field Emergency Purchases.
27. Memorandum Receipt Form A-173.
28. Purchase Order and Receiving Record.
29. Equipment Department Invoice.
30. Bills Which Exceed $50.00 to be Accompanied by Form A-22.
31. Record of Tires to be Kept.
32. Field Purchase of Car Batteries.
33. Speedometers.
34. Field Repairs to Equipment.
35. Equipment Rental Report.
36. Transfer of Charges and Correction of Erroneous Cost Distribution.

### EQUIPMENT AND PROPERTY CONTROL

#### Article 1—Board of Control to be Notified Before Engineer Leaves Department

Advance notice must be given to the State Property Control Department whenever an engineer or other person charged with or held responsible for state-owned equipment or other property is to leave the employment of the Highway Department.

The giving of this advance notice is a joint responsibility of the employee concerned and his immediate superior. These men should check with each other to make sure that the required notification is given.

This notice should be given sufficiently in advance of the date of discontinuance to make possible the retention of the employee's earnings in an amount sufficient to insure a proper accounting for the property involved.

#### Article 2—Stamped Approvals Not Accepted

Rubber stamp approvals will not be accepted.

#### Article 3—Requests for Mechanized Equipment

Requests for mechanized equipment shall be made, through regular channels, to the Construction Engineer.

#### Article 4—Requisitions

(a) *Purchase Through Storeroom*—Requests for engineering equipment, materials and supplies usually carried in our storerooms shall be made on Form A-33, "Storeroom Requisition". (For invoices on this type of purchase see 16-29.)

*Instructions as to Routing Copies—Form A-33.*

Requisition originated by Resident Engineer:

*For Salem Storeroom*—Original, triplicate and quintuplicate will be forwarded to the Division Engineer. Division Engineer will approve the first two copies, retain the triplicate and forward the original and quintuplicate through the Maintenance Engineer's office to the Salem storeroom. The Resident Engineer will retain the quadruplicate and destroy the duplicate.

*For Branch Storeroom*—Original, duplicate, triplicate, and quintuplicate, will be forwarded to the Division Engineer. Division Engineer will approve first three copies, retain the triplicate, and forward the original, duplicate and quintuplicate to the nearest storeroom. The quadruplicate will be retained as stated above.

Requisition originated in office of Division Engineer:

*For Salem Storeroom*—Original and quintuplicate will be forwarded to the Maintenance Engineer who will approve the original and forward both copies to the storeroom. The Division Engineer will retain the quadruplicate and destroy the triplicate, and duplicate.

*For Branch Storeroom*—Original, duplicate, and quintuplicate will be forwarded to the branch storeroom. Division Engineer will retain the quadruplicate and destroy the triplicate.

(b) *Items to be Purchased From Vendors*—Request for supplies, etc., which are not usually carried in our stock room and for items which can not properly be classified as "emergency", shall be made on Form No. A-34 "Purchase Requisition". (Important: See Section 16, Article 26 for Emergency Field Purchases.) Form A-34 will be routed as follows:

*Requisition Originated by Resident Engineer*—Original, duplicate and triplicate will be forwarded to Division Engineer, who will approve all copies, retain the triplicate and forward the original and duplicate through the Maintenance Engineer's office to the Accounting Division. The quadruplicate will be retained by the Resident Engineer.

*Requisition Originated in Office of Division Engineer*—The original and duplicate will be forwarded to the Maintenance Engineer for approval. The duplicate will be retained by the Maintenance Engineer and the approved original forwarded to the Accounting Division. The triplicate will be retained by the Division Engineer and the quadruplicate will be destroyed.

### Article 5—Transfer of Equipment on Rental Basis

When property on rental is being transferred, Form A-29 "Equipment Transfer Report" shall be made out by the person from whom the property is being transferred. The rental rate and the effective date of rental charges must be shown in the space provided. See 16-20 for planometer transfers.

### Article 6—Transfer of Supplies and Equipment Not on Rental Basis

When property not on rental is transferred, Form A-49 "Transfer of Property" must be prepared. This form is to be used only in transferring property from a Resident Engineer or person in responsible charge to another Resident Engineer or person in responsible charge. Follow instructions on the face of the form.

### Article 7—Equipment and Supplies Not to be Transferred Without Approval

Resident Engineers are not permitted to transfer equipment or supplies between each other without approval of the Division Engineer or the Construction Engineer.

### Article 8—Effective Date of Rental Charges

Rentals, under either or both schedules, will be computed from the day equipment leaves an equipment depot until it is returned, both days included. Or in the case of transferring equipment from one engineer to another, the engineer receiving the equipment shall be charged rental beginning with the date of shipment.

### Article 9—Standard Stationery and Office Supplies

The storeroom maintains a large stock of standard office supplies and it is requested that all such supplies be requisitioned from this source.

### Article 10—Property Lost, Stolen, for Sale or Exchange

Form A-182 "Request for Relief of Property Lost, Stolen, for Sale or Exchange" shall be used for all property which is lost or stolen on which persons in responsible charge are asking relief. It must bear the signature of all members of the Board of Survey before the person in responsible charge shall be relieved of responsibility. Property stolen or lost must be promptly covered by Form A-182, listing the lost items separately from those stolen giving both date and circumstances.

In cases where bulky property is in such a condition that it is impossible to send it in or it is beyond any further use, such as rusted out stove pipe, worn out and torn mattresses, etc., write in for special instructions for disposal, giving full particulars as to age, condition, circumstances, quantity, cost and method of transportation to send in, etc.

Request for Relief of Property, Form A-182, is to be used only to cover property that has been lost, stolen or accidentally destroyed (as by fire). Form A-49 is to be used when property is being transferred or turned in.

When making request for relief be sure to give full particulars under "Remarks". To say only that the property was lost or stolen on such and such a date intimates carelessness and will invariably occasion the recommendation against relief. *It is, therefore, necessary to give complete details as to how, why, when and where the property disappeared, when first noticed, what action or steps were taken to find or recover, etc.* Only by your remarks and explanations can the Survey Board intelligently act upon your request for relief.

### Article 11—Careless or Negligent Care of Equipment is Cause for Dismissal

Any person found to be careless or negligent in the care or handling of State equipment will be discharged immediately.

### Article 12—State Supplies and Equipment are not for Private Use

State supplies or equipment shall not be used for any other purpose than that for which they are intended, special reference being made to gas and oil purchases which shall be used in State vehicles. Failure to comply explicitly with these orders will be cause for instant dismissal.

### Article 13—Property Not to be Transferred Outside of Department

State-owned property of any kind shall not be transferred to any party or organization which is not a part of the Oregon State Highway Department except upon specific approval of the State Highway Engineer.

### Article 14—Operation of Equipment

The Board of Control receives a monthly report of all automobile accidents occurring during the month, and whenever a driver of State equipment is involved in an accident where the facts indicate that he was to blame for the accident, warning should be issued to him.

The insurance company carrying our insurance has indicated that they will refuse to continue to insure a driver who is involved in more than two accidents for which he is entirely to blame.

### Article 15—Care and Time of Replacement of Tires

Tires will not be considered as worn out and will not be replaced unless the carcass of the tire shows signs of distress. Tires must be sent to one of the State Shops for recapping *before the carcass shows signs of distress and before the fabric shows.*

Tires on equipment operated by the State Highway Department are to receive the same consideration as tires used on vehicles in private use. It is not intended that State Highway Department employees' lives be endangered for the sake of economy wherein there is danger of a tire blowing out, but it will be necessary that operators of cars take into consideration the condition of the tires and drive accordingly.

### Article 16—Field Purchase of Tires

It is sometimes necessary under extreme conditions for field employees to purchase tires or tubes in the field. The firm under contract to furnish tires and tubes to the State is at the present time the Signal Oil Company. However, their contract covers only wholesale deliveries from their Portland office. Under present war time conditions the purchase of tires and tubes will have to be made at the most advantageous price possible, and from whatever dealer can furnish the tires or tubes needed. Under normal conditions the state contract will be placed with such tire and rubber company as can best supply State needs, both wholesale and retail, and at that time the persons securing tires or tubes for State equipment from other than the contracting company will be held responsible for the difference in price which the State would pay the company under contract.

Refer to Section 16, Article 26, for instructions to be followed when making an emergency field purchase.

### Article 17—Classes of Equipment Rental

Equipment rentals are of three classes.

*Schedule "A" (Monthly Basis)* for equipment regularly assigned to engineering, construction and/or maintenance work in charge of an engineer or a sectionman.

*Temporary Field Storage* does not apply to equipment on a monthly rental basis, and although the equipment is worked only a few days a month, it is *not* considered in storage the non-use days and must be carried upon the monthly equipment inventory for the full month or until transferred.

*Dead Storage* can be arranged for special seasonal equipment not required at the Equipment Shops for overhaul and certain to be reassigned to the same location. This type of storage is used to save the expense of needless moving of equipment to Equipment Shop storage and back again. In dead storage of mowers, asphalt kettles, snow plows, sanders, etc., there will be certain procedure and instructions which the Shop Superintendents will wish to specify; therefore, this type of dead storage should be arranged for by taking the matter up with the Equipment Shop Superintendents.

Fractional months must be computed on the basis of a 30 day month.

*Schedule "B" (Shift Basis)* for equipment assigned to extra gangs, special crews or to emergency crews on temporary assignment to regular maintenance and/or construction work. Equipment on shift basis rental may be used a minimum of 33 1/3% or ten shifts per month and is considered in *temporary field storage* the part of the month it is not in use, and for the non-use days it is *not* shown on the monthly inventory.

*Schedule "C" (Hourly Basis)* for snow plows rented to Governmental Agencies, State Departments, Counties, Cities, and other outside parties.

Rentals, *under all schedules,* will be computed from the day equipment *leaves* an Equipment Depot until it is *returned.*

### Article 18—Charges for Upkeep, Repair and Operation

The rates set up in both schedules are designed to cover all charges for overhauling the equipment; also, all charges for field repairs and all replacement parts except the replacement and repair of grader blades, snow plow blades, scarifier teeth, broom cores, pressure kerosene burners, section hose, cable, mower guards or anything pertaining to the cutting apparatus of mowing machines. Charges for gas, oil, grease, anti-freeze solutions and storage are not covered by the rental, but charged to the job. (The rental, however, absorbs all labor charges for greasing, oiling and washing.) All tools to replace tools originally checked out with equipment, small tools and supplies used by field mechanics in repairing equipment, and all repairs, replacements and towing charges due to wrecks in cases where the driver is at fault and not due to mechanical condition of the equipment, are *not* covered by rental but charged to the job and the cost distribution should be given on all Emergency Purchase Requisitions and/or Storeroom Requisitions. Charges for items covered by the rental should not be distributed direct to the job on which the equipment is being used but the equipment numbers should be shown on all Emergency Purchase Requisitions and/or Storeroom Requisitions, covering such charges. Labor performed by members of State crews in making minor emergency repairs on equipment must be charged direct to the job.

### Article 19—Rental Rates

The rates set up in both schedules are based on a definite depreciation on each item and/or class of equipment and are made from experience records. The depreciated rates are shown in the second column of the schedule. After the original cost of any piece of equipment (plus betterments) have been amortized, the rental rate will be reduced to the depreciated rate. You will be notified when this depreciated rate becomes effective on any piece of equipment.

## SCHEDULE "A"
## MONTHLY BASIS

| | *Regular Rate* | *Depreciated Rate* |
|---|---|---|
| **CARS** | | |
| *Light Cars*— | | |
| Chevrolet, Ford and Mercury | $ 39.90 | $ 24.60 |
| *Heavy Cars*— | | |
| Buick and Studebaker | 75.90 | 42.90 |
| **TRUCKS** | | |
| *Pick-ups* and *Station Wagons* | $ 39.90 | $ 24.60 |
| *Light Trucks:* 1-1½ Ton Capacity— Chevrolet, Dodge, Ford, G. M. C., International | 45.30 | 36.30 |
| *Medium Trucks:* 2-3 Ton Capacity— Diamond "T", F. W. D., Marmon-Herrington | 96.00 | 66.00 |
| *Heavy Trucks:* Over 3 Ton Capacity— Federal, G. M. C., Kenworth, Marmon-Herrington, Oshkosh, Walter | 182.10 | 122.10 |
| **ENGINEERING EQUIPMENT** | | |
| *Levels* | $ 2.00 | $ 1.00 |
| *Transits* | 3.00 | 2.00 |
| **MISCELLANEOUS EQUIPMENT** | | |
| *Asphalt Kettles*— | | |
| 50-100 Gallon | $ 9.90 | $ 5.10 |
| 200-225 " | 12.60 | 6.90 |
| 300 " | 15.00 | 8.70 |
| 550 " | 30.00 | 20.40 |
| *Brushes*—Wire | 2.10 | 1.50 |
| *Dozers*—Angle and Bull | 60.60 | 38.10 |
| *Drills*— | | |
| Churn | 38.40 | 26.40 |
| Mine | 25.80 | 8.70 |
| *Graders*— | | |
| Patrol— 6 Tires | 76.80 | 52.80 |
| 10 Tires | 103.20 | 79.20 |
| Pull— 7 and 8 Ft. | 7.50 | 5.70 |
| 10 " | 26.10 | 15.30 |
| 12 " | 49.50 | 30.60 |
| *Jackhammers, Chipping Guns, etc.* | 9.60 | 6.60 |
| *Maintainers* | 13.50 | 10.20 |
| *Mowers*— | | |
| Lawn | 6.60 | 5.10 |
| Power | 51.30 | 36.30 |
| Pull | 5.10 | 2.70 |
| *Paint Machines*—Portable | 6.60 | 5.10 |
| *Pump Units*— | | |
| 2" | 3.30 | 2.40 |
| 3" | 5.10 | 3.30 |
| 4" | 27.90 | 18.90 |
| 6"-4 Stage | 156.00 | 78.00 |
| Fire | 11.40 | 7.80 |
| Mine | 19.80 | 13.50 |
| Sub-Irrigation | 16.80 | 11.40 |
| *Road Magnet* | 42.60 | 24.00 |
| *Sand Spreaders* | 3.00 | 1.80 |
| *Saws*—Wood and Drag | 2.10 | 1.20 |

| | Regular Rate | Depreciated Rate |
|---|---|---|
| *Snow Plows*— | | |
| 8 Ft. | $ 11.10 | $ 6.90 |
| 10 " | 22.20 | 10.50 |
| 12 " | 26.40 | 13.80 |
| Bros "V" Type | 112.20 | 79.20 |
| Ross "V" Type | 44.70 | 30.00 |
| Snow King | 66.30 | 38.40 |
| Snogo | 221.40 | 125.40 |
| *Street Sweepers*—Power | 57.60 | 39.60 |
| *Tractors*— | | |
| Cletrac | 105.30 | 69.30 |
| Fordson, McCormick-Deering | 45.00 | 33.00 |
| RD 8 | 247.50 | 181.50 |
| *Traffic Line Markers* | 54.00 | 33.00 |
| *Trailers*— | | |
| 1-½ Ton—Tank and Tool House | 9.00 | 5.70 |
| 2-5 Ton—Cargo and Chassis | 18.00 | 10.50 |
| 2-5 Ton—Tank and Tool House | 27.00 | 18.60 |
| 4 Ton—2 Wheel | 11.10 | 6.90 |
| Patrolman House | 6.30 | 3.30 |
| Bolster Type | 22.50 | 15.60 |
| Kozy Kamp | 7.50 | 4.50 |
| *Vibrator Unit* | 9.60 | 6.60 |
| *Welding Unit* | 64.20 | 46.20 |
| *Wrench Set*—Socket | 5.40 | 3.30 |

## SCHEDULE "B"
## SHIFT BASIS

### TRUCKS

| | Regular Rate | Depreciated Rate |
|---|---|---|
| **Pick-ups and Station Wagons* | $ 2.00 | $ 1.20 |
| *Light Trucks:* 1-1½ Ton Capacity— | | |
| Chevrolet, Dodge, Ford, G. M. C., International | 2.25 | 1.80 |
| *Medium Trucks:* 2-3 Ton Capacity— | | |
| Diamond "T", F.W.D., Marmon-Herrington | 4.60 | 3.00 |
| *Heavy Trucks:* Over 3 Ton Capacity— | | |
| Federal, G.M.C., Kenworth, Marmon-Herrington, Oshkosh, Walter | 8.75 | 5.95 |

### MISCELLANEOUS EQUIPMENT

| | | |
|---|---|---|
| *Air Compressors*— | | |
| 66-105 cu. ft. | $ 1.55 | $ .65 |
| 220 " " | 2.10 | 1.30 |
| 360 " " | 4.75 | 2.75 |
| *Asphalt Kettles*— | | |
| 50-100 Gallon | .55 | .30 |
| 200-225 " | .65 | .35 |
| 300 " | .75 | .45 |
| 550 " | 1.25 | .90 |
| *Boilers*— | | |
| On Skids | .70 | .30 |
| On Trailer | 2.65 | 1.65 |
| 15 H. P. | 2.65 | 1.65 |
| 20 H. P. | 3.60 | 2.45 |
| 2-Car Booster Type | 3.60 | 2.45 |
| *Burners*—Street | .70 | .55 |
| *Ditcher* | 13.25 | 8.25 |
| *Dozers*—Angle and Bull | 2.95 | 2.00 |
| *Drag Line* | 5.30 | 3.20 |
| *Drills*— | | |
| Calyx Core | $ 5.05 | $ 3.20 |
| Mine | 1.30 | .35 |
| *Graders*— | | |
| Patrol— 6 Tires | 3.95 | 2.75 |
| 10 Tires | 5.15 | 3.95 |
| *Jackhammers, Chipping Guns, etc.* | .35 | .25 |
| *Loaders*— | | |
| Bucket | 12.25 | 8.25 |
| Tractor | 3.80 | 2.30 |
| Force Feed (Athey) | 12.70 | 7.70 |
| *Mixers*— | | |
| Concrete—½ Sack | .55 | .30 |
| 1 Sack | .85 | .45 |
| *Mud Jack* | 3.20 | 2.20 |
| *Paving Plants*— | | |
| Drum Mixer | 12.40 | 9.90 |
| Single Drum Pug Mill | 21.30 | 14.50 |
| Double Drum Pug Mill | 37.80 | 30.80 |
| *Pile Driver* | 2.65 | 1.65 |
| *Power Unit* | .80 | .55 |
| *Pump Units*— | | |
| 6"-4 Stage | 5.70 | 2.20 |
| Sub-Irrigation | .55 | .35 |
| Miscellaneous | .45 | .15 |
| *Retorts*— | | |
| Coil Type | 9.80 | 8.25 |
| Rotary Type | 22.65 | 18.20 |
| *Rollers*— | | |
| 6 Ton | 3.70 | 2.50 |
| 10 Ton | 5.35 | 3.85 |
| *Sand Blast Pot* | 1.10 | .90 |
| *Scraper*—Karry-All | 5.30 | 3.30 |
| *Shovels*— | | |
| Truck | 11.65 | 7.25 |
| ½ cu. yd. | 9.40 | 5.80 |
| 1¼ " " | 26.50 | 16.50 |
| *Street Sweepers*— | | |
| Pull | 2.00 | 1.10 |
| Power | 2.40 | 1.65 |
| *Tractors*— | | |
| Cletrac | 6.95 | 4.00 |
| Fordson, McCormick-Deering | 2.25 | 1.65 |
| *Traffic Line Markers* | 2.65 | 1.90 |
| *Trailers*— | | |
| 1-1½ Ton—Tank and Tool House | .45 | .35 |
| 2-5 Ton—Cargo and Chassis | 1.35 | .95 |
| 2-5 Ton—Tank and Tool House | 1.35 | .95 |
| 2-5 Ton—Tender | 2.90 | 1.25 |
| 6 Ton—Drop Frame | 2.40 | .95 |
| 10 Ton—Drop Frame | 3.65 | 1.55 |
| 15 Ton—Platform | 3.65 | 1.55 |
| Gas Service Trailer | 1.35 | .95 |
| Kozy Kamp | .35 | .25 |
| Semi-Trailer | 3.35 | 2.30 |

*To be used for billing to "outside parties" only, such as contractors, counties, etc.

## SCHEDULE "C"
## HOURLY BASIS FOR SNOW PLOWS

The following rental is established to cover snow plow work performed for Governmental Agencies, State Departments, Counties, Cities,

or other outside parties under authority of Orders to Render Service, Form No. E-189.

| | Per Hour |
|---|---|
| A-1 Plow on two-wheel drive trucks, such as Fords, Chevrolets, Internationals, and Dodges | $2.50 |
| A-4 Plow on four-wheel drive trucks up to and including 3-ton trucks, such as Marmon-Herrington and light F.W.D. trucks | 4.00 |
| B-1 Plow on heavy two-wheel drive trucks above two tons | 4.25 |
| B-2 Mold board plow on large four-wheel trucks above three tons | 5.50 |
| B-3 V-type plow with right and left wings on 10-ton trucks | 6.25 |
| Snogo rotary plow | 8.00 |

These rates cover the truck, plow, operators, fuel, oil, and repairs.

### Article 20—Planometer Rental Basis

Planometers will be charged to the Resident Engineers in a manner comparable to the direct purchase. In transferring these machines from one engineer to another the cost of the machine should be decreased at the rate of $2.00 per month or fraction thereof if it has been used on the job. For periods when these machines are not in use no charges should be absorbed, as in the winter months.

Form A-29 Equipment Transfer Report shall be used in transferring planometers. (This instrument is not to be confused with the planimeter, used for obtaining areas of plane figures.)

### Article 21—Gas and Oil Purchases at State Pumps

(a) *Gas, Oil and Grease From State Shop Pumps*—The instructions contained herein apply only to service obtained from pumps located at state shops.

The duplicates of gas, oil, and grease tickets, Form A-81, issued for service obtained at shop gas pumps, are to be retained by the driver and turned in to his headquarters office, as follows:

| *Employees of* | *Duplicate Tickets to be Turned in to* |
|---|---|
| Resident Engineer | Resident Engineer's office |
| Locating Engineer | Locating Engineer's office |

In case the driver is not with the equipment when serviced, the duplicate ticket will be forwarded to the respective headquarters office, by the shop office. The headquarters office is to indicate the cost distribution on every gas ticket for service obtained at shop gas pumps, and forward such tickets to the Accounting Division as of the close of business on the fifteenth and last day of each month. The tickets should be accompanied by a note indicating "Service from Shop Pump", in order to identify the group of tickets when received by the Accounting Division.

The Accounting Division will prepare forms A-30 and A-32. Form A-31 is not required to be submitted for this class of tickets.

(b) *Gas, Oil and Grease From Maintenance Pumps*—Pumps located at division office, district maintenance offices and section headquarters will be herein referred to as "maintenance pumps".

Whenever gasoline, oil and grease is obtained from a "Maintenance Pump", a ticket (Form A-15) must be filled out showing all the information called for on the form, also the proper cost distribution. The cost distribution is to be placed in the space at the bottom of the ticket. The words "Cost distribution of items not used on equipment" refer to maintenance equipment. The ticket must be signed by the driver and if the attendant is not present the driver must also sign the ticket as pump attendant. The triplicate copy of the ticket is to be deposited by the driver in the locked box provided for that purpose. The original copy of the ticket is to be left with the book for the pump attendant who will forward it to the District Maintenance Superintendent.

When gasoline is obtained from a maintenance pump by the driver of equipment in transit, when the cost distribution is not known, the procedure outlined above shall be followed with this exception: The driver need not show cost distribution on the ticket but shall retain the triplicate copy and turn it in to the party to whom the equipment is consigned, who will show cost distribution and forward the ticket to the Accounting Division. In such a case the pump attendant is to write, in the cost distribution space on the original ticket, the words "Triplicate to Driver".

### Article 22—Gasoline and Oil Purchases at Public Stations

Each year the Oregon State Board of Control enters into a contract with one of the oil companies for the purchase of petroleum products to be used in state equipment. The terms of the contract cover both bulk and service station deliveries.

Employees of the State Highway Department are required to obtain gasoline, oil, etc., from state-owned pumps whenever possible. In an

emergency, credit card purchases may be made from service stations dispensing products of the company under contract. If purchases are made of products other than those of the contracting company, a letter of explanation giving the reason for such purchase, will be required.

Field crews will be notified, each year, of the company holding a contract to furnish gas, oil and grease to state equipment.

Instructions relative to the handling of service station charge slips follow:

When service is obtained by the use of a credit card, the employee who signs for the service shall, at the time he signs the service station charge slip, write the Highway Department equipment number and the cost distribution, so that all copies of the charge slip will indicate such information. This information is of the utmost importance in the final approval of the charges for payment, which will be made in the Accounting Division.

A copy of the service station charge slip must be obtained from the service station attendant immediately after signing the slip. This copy is to be forwarded by the employee to his immediate superior for approval, and immediately thereafter the slip is to be forwarded to the Accounting Division.

Offices keeping field cost records, will be expected to take their costs from the service station charge slip, on its way to the Accounting Division.

The price shown on a service station charge slip will not agree with the price covered by contract. A schedule of contract prices will be furnished with the letter of notification of the company holding the contract, so that the charges from service station slips may be posted to the field cost records at correct prices.

*Copies of service station charge slips will not be returned to the field* after having been received by the Accounting Division. It is imperative therefore, that each charge slip be complete as to equipment number, cost distribution, and signatures.

### Article 23—Storage for State Cars

State-owned cars when not in use shall be stored in highway equipment shops or equipment sheds where same are available. If state-owned or rented equipment sheds are not available, the cars should be stored in commercial garages at a reasonable storage rate. Under no circumstances shall any employee use a state-owned car for transportation between his home and the office save and except when he returns so late at night that it is not possible for him to place the equipment in storage buildings. Exception is made in the case of requiring storage in state shops at Klamath Falls, because the state shops are three miles from the center of the city. Permission is given in this case to rent storage in commercial garages, provided the rent is reasonable.

### Article 24—Do Not Park Cars on the Street for Long Periods

Do not keep a state car parked on the street other than for short periods of time. Cars deteriorate rapidly when exposed to the weather. Furthermore, when the vehicle is stored in the state shop it is available for use for other employees in case of emergency. If you are to be in the office all day or the major portion of the day, store the car either in the state equipment buildings or in a commercial garage as the case may be and don't take the equipment out until you are ready to go out on official state business requiring an automobile. It will not be necessary for employees who do not have keys to shops or sheds to store in state buildings when they arrive after closing hours.

### Article 25—Mileage for Use of Private Cars

Mileage will be paid for the use of private automobiles only under specific conditions, viz:

(a) In the case of bridge tenders who have two or more bridges to look after and who have to make occasional trips which would not warrant the keeping the state equipment and then only when specifically approved by the State Highway Engineer.

(b) In the case of county employees temporarily hired by the State and under arrangements specifically approved by the State Highway Engineer.

(c) Specific instances wherein state equipment is not available, for periods of short duration only, and then only when specifically approved by the State Highway Engineer.

### Article 26—Field Emergency Purchases (Form No. A-16)

Field emergency purchases are defined as purchases which, because of their nature or their urgency, cannot be made through the Accounting Division at Salem, or avoided by ordering from a department storeroom. They shall be limited to purchases of items, the need for which arises on short notice, and the de-

livery of which must be had immediately in order to avoid expensive delays, or to prevent damage. They may, however, include items such as office rent, public utility services and storage charges which, by reason of their nature, cannot be handled through the Requisition Department.

Field emergency purchases shall be limited to purchases made from dealers *located in the immediate vicinity of the work.* If materials, supplies or parts are to be obtained from wholesalers or manufacturers at points not in the immediate vicinity of the work, the purchases are to be requisitioned on purchase requisition Form *A-34* and forwarded through the regular channels of approval.

In making emergency purchases, competitive quotations should be obtained, if possible, before the order is placed.

It shall be understood that in every instance, where it is possible, requirements shall be anticipated sufficiently in advance to enable ordering through the regular channels. Emergency requisitions for purchases of parts to be used on equipment, or for repairs to equipment, shall not be issued for an amount in excess of $5.00, without the approval of the nearest shop superintendent, or master mechanic, except when the nearest shop superintendent, or master mechanic, is at a greater distance than 25 miles, in which case the limit without approval shall be $15.00. Estimates of the cost of parts for equipment and of repairs to equipment, shall be obtained from the vendor, and, in the event the estimate exceeds $5.00 or $15.00 subject to the foregoing provisions, the engineer or foreman in need of such parts or repairs shall communicate with the nearest shop superintendent, or master mechanic, before issuing the emergency requisition. In the event of actual emergency, wherein the materials and/or repairs will exceed $50.00, verbal approval shall first be obtained from the proper Staff Engineer before the emergency requisition may be issued. The duplicate of such emergency requisition, after having been approved by the Division Engineer, shall be forwarded to such Staff Engineer for approval.

Emergency requisitions are not to be issued to cover damage to property resulting from the activities of the Highway Department. Report of such damage is to be carried on exactly as heretofore.

A requisition shall be issued for each emergency purchase, the requisition being prepared in each instance on Field Emergency Purchase Requisition Form No. A-16.

For all emergency purchases other than equipment repair work, the engineer or foreman shall prepare and sign Form A-16, in quadruplicate, at the time of purchase. Requisitions for equipment repair work may be made up and signed when the repair work is completed, and when the exact cost is known. In an exceptional case, when the garage owner does not have the repair part in stock, and receives it from some central depot before the invoice is received, the emergency requisition is to be sent in, showing the approximate cost plainly marked "Approximate".

The requisition shall show the date ordered, the quantities ordered, and the cost distribution, the cost distribution shall be shown for each item requisitioned. In the event parts are requisitioned for repairs to equipment, the requisition shall show the equipment number. In case the engineer or foreman issues the requisition in the office of the vendor, the price of each item shall be written on the requisition at the time of issue. When the requisition is issued on the job, the prices of the items should be indicated on the duplicate requisition by the person receiving the items.

One book of Form A-16 contains 25 sets of requisitions, and a set of carbon sheets is attached to each set of requisitions so that there will be no handling of carbons. The sets are designed in such a way that the original, duplicate and quadruplicate requisitions, and all carbon sheets of one set may be detached simultaneously, leaving the triplicate requisition in the book. In order to detach one set of requisitions, hold the book in the left hand and grasp the stub of one set of requisitions in the right hand. A steady easy pull with the right hand will leave the triplicate requisition in the book. Next, take a firm hold of the left hand margins of the three sheets in the set with the left hand. A quick snap with the right hand will separate the copies of the requisitions, and the carbon sheets will remain on the right hand stub which is to be thrown away.

The original of the requisition shall be presented to the vendor by the person sent to pick up the items requisitioned. The duplicate, after the stub has been removed, shall be given to the person who is expected to check-in the items received. The duplicate of the requisition then becomes a receiving record, and the person

checking-in the items shall count, weigh, or measure such items received, write the quantities in the "Quantities Received" column, and affix his signature in the space provided in the lower left hand corner of the form. The duplicate and quadruplicate requisitions shall then be forwarded as follows:

*For Purchases by Engineering Crews*—The duplicate shall be forwarded to the division office, where the Division Engineer shall approve the requisition as to items ordered, and as to cost distribution, and shall forward the requisition to the Accounting Division at Salem.

The quadruplicate shall be forwarded directly to the Construction Engineer, or the Bridge Engineer, to be retained in his files.

Emergency requisitions for initiating service for public utility charges of light, gas, water, and telephone, for monthly storage charges on equipment, and for office rent, will be required. Emergency requisitions will not be required for each subsequent month of service, but the engineer responsible for the charges shall promptly notify the Accounting Division of the discontinuance of such service.

In the case of emergency repairs of tubes, and emergency purchases of repair parts, when the equipment on which the parts are to be used is in transit and the parts are needed in order to permit the equipment to be operated immediately, the person obtaining such tube repairs or repair parts may have the expense charged, and obtain a sales ticket in duplicate from the vendor. The sales ticket shall show the date of the transaction, the equipment number, details of the items as to quantity, unit, description, unit prices and amounts, and the total charge. The sales ticket shall be approved by the engineer or foreman in charge of the crew, and shall be forwarded as follows:

*For Purchases by Engineering Crews*—Both copies of the sales ticket shall be forwarded to the division office where the Division Engineer shall approve and forward both copies to the Construction Engineer or Bridge Engineer. The Construction Engineer or Bridge Engineer will retain one copy of the sales ticket for his files and forward one copy to the Accounting Division at Salem.

It is suggested that the approvals be placed on the back of the sales ticket in order that the details on the face of the sales ticket will not be marked over.

*Inasmuch as the approved duplicate of the field emergency purchase requisition is to be forwarded to the Accounting Division, and is to be used by the Accounting Division for comparison with the vendor's invoice, it will not be necessary to approve the invoices in the field, except as set forth in the paragraph below.* A copy of the audited invoice will be forwarded by the Accounting Division to the field office keeping the field cost records.

Invoices for electric power, gas, water and telephone; invoices for monthly storage charges on equipment, and invoices for office rent will continue to be sent to the field for approval, as requisitions for those items are necessarily indefinite as to amount and expiration limit. Invoices sent to the field offices for approval will be marked by a slip attached by the Accounting Division, stating that the invoices are to be approved and returned.

Emergency requisitions will not be required to be issued by Staff Engineers, Division Engineers and other administrative employees when storing cars overnight, or when having car repair work performed, at garages where the Department maintains charge accounts. For each such charge, however, the engineer shall obtain a sales ticket and, after approving the ticket and showing the car number, shall forward it to the Accounting Division at Salem, to be used by the Accounting Division in auditing the statement received from the garage. If the engineer desires a copy of the sales ticket for his own files, he should request the garage to issue a duplicate copy for that purpose.

The Division Engineer will be expected to see that emergency purchasing is held to a minimum in his division.

Changes in cost distribution on field emergency purchase requisitions may be made prior to the time the receiving record (duplicate) copy is forwarded to the Accounting Division, otherwise the changes should be requested on Form A-87.

### Article 27—Memorandum Receipt (Form A-173)

This form is used to fix the responsibility for property on all emergency purchases and on all shipments direct from the vendor. This form will be prepared by the Accounting Division on all commercial invoices covering purchases of this nature, and sent to the field for signature.

### Article 28—Purchase Order and Receiving Record

The purchase order forms referred to hereinafter are the forms used by the State Purchasing Department in placing orders with com-

mercial firms for goods requisitioned by the Highway Department. The forms are filled out in the office of the State Purchasing Department and are forwarded by that Department to the firm from which the purchase is to be made. Several copies of each purchase order come to the Highway Department, and it is the handling of these copies that is hereinafter described.

Purchase order Form (A-36) is so designed that the triplicate copy becomes a receiving record by which the person receiving the goods (materials, supplies, parts, etc.), shall record by actual count, measure, or weight, the items actually received.

*The Accounting Division at Salem will approve all invoices of purchase orders, using as its authority the receiving record submitted from the field. The vendor's invoices will not be approved in the field, but an audited copy of the invoice will be sent to the field office in which the field cost records are kept.*

The procedure requires that the cost distribution be shown on the purchase requisition Form A-34 (see Sec. 16-4) at the time it is prepared. The distribution so shown will be used by the Accounting Division in making distribution of the invoiced amount. In every instance in which it is possible, show the actual final cost distribution opposite each item on the requisition. On all requisitions for equipment parts, the cost of which is covered in the Equipment Department rental rate, distribution shall be by equipment number only, distribution by job prefix and account number not being required on requisitions of that kind.

Immediately upon receipt of the purchase order from the State Purchasing Department, the Accounting Division at Salem will forward the triplicate copy of the order to the person indicated on the purchase order as the consignee. The quadruplicate copy will be forwarded to the office in which the purchase requisition was prepared.

The triplicate copy of the purchase order, when sent to the consignee, will not show the quantities ordered, but will be complete as to all other information concerning the order. As a general rule, it is expected that the triplicate purchase order will reach the consignee prior to the shipment of the goods.

When the consignee receives the shipment, he shall count, measure, or weigh the items received, and write the quantities on the triplicate purchase order in the "Quantity Received" column. The date received, and the signature of the person who received the items, shall be affixed. The triplicate purchase order then shall be *forwarded at once* to the office in which the purchase requisition originated.

When the triplicate purchase order is received by the office of origin of the requisition, it shall be compared at once with the quadruplicate purchase order. In the event the shipment is complete, the word "Complete" shall be written on the triplicate purchase order, the signature of the person responsible for the property shall be affixed and dated, and the triplicate purchase order *forwarded at once* to the Accounting Division at Salem. In the event the shipment is not complete, the office of origin of the requisition is to prepare an original only of a partial shipment receiving record, Form A-39, showing the description of *Items not shipped,* and other information as shown on the quadruplicate purchase order. *Do not copy quantities ordered.* The partial shipment receiving record then shall be sent to the consignee, and the triplicate purchase order shall be forwarded to the Accounting Division at Salem. The consignee will use the partial shipment receiving record for checking in the next shipment from the same vendor, and shall sign and date the receiving record and forward it promptly to the office of origin of the order. The office of origin shall compare the partial shipment receiving record with the quadruplicate purchase order, and, if the order has been completely shipped, shall write the word "Complete" on the partial shipment receiving record, the signature of person responsible for property shall be affixed and dated, and the partial shipment receiving record shall be forwarded to the Accounting Division at Salem. In the event the second shipment does not complete the order, the operation of a partial shipment receiving record shall be repeated. The Accounting Division at Salem shall consider a shipment incomplete, unless the triplicate purchase order, or the partial shipment receiving record, is plainly marked "Complete".

The Accounting Division at Salem will compare the receiving record with the quintuplicate purchase order, and the vendor's invoice, and will audit the quantities, prices, extensions, and total on the invoice. The cost distribution will be indicated on each copy of the invoice, and as soon as audited, a copy of the audited invoice will be forwarded by the Accounting Division

at Salem to the field office which keeps the field costs for the jobs involved.

Please bear in mind that promptness on the part of each individual affected by this procedure will serve to speed up the payment of claims and the recording of costs on the accounting records.

In order to reduce the number of requests for changes in cost distribution indicated on the purchase requisition, the best available cost distribution will be indicated on the receiving record copy of the purchase order, whether such distribution is the same or different from that shown on the purchase requisition. The cost distribution shown on the receiving record will be transcribed to the copies of the invoices in the Salem office. Any changes which occur after the receiving record is forwarded to the Accounting Division, should be reported on Form A-87, Request for Transfer or Correction of Cost Distribution.

The above instructions govern the cost distribution on *purchase order receiving records* only, and in no way affect the procedure relative to changes in cost distribution on storeroom requisitions. Any changes in the cost distribution indicated on the latter are to be reported on Form A-87.

### Article 29—Equipment Department Invoice

Equipment Department Invoice Form A-11 is designed so that the duplicate copy becomes a receiving record for the use of the Accounting Division at Salem, and the triplicate copy becomes a receiving record for the use of the Property Control Department. The form will show the equipment number and the cost distribution, opposite each item billed, and the cost value of each of the items billed, as well as the amount charged to the cost distribution. The cost value is for the use of the storerooms and the Accounting Division, and will not be used by other departments or field offices. The amount to be used by the field offices will be shown in the "Amount Charged" column. In case the cost distribution is the same for all items billed on one invoice, the amount charged will be shown in total, opposite the total of the cost value for all items.

The procedure requires that the cost distribution be shown on the storeroom requisition, Form A-33, at the time the requisition is prepared. The distribution so shown will be used by the Accounting Division in making distribution of the invoiced amount. In every instance in which it is possible, show the actual final cost distribution opposite each item on the requisition. On all requisitions for equipment parts, the cost of which are covered in the equipment department rental rate, distribution shall be by equipment number only, distribution by job prefix and account number not being required on requisitions of that kind.

The Equipment Department Office at Salem will prepare six copies of the equipment department invoice, Form A-11, retain the sextuplicate, and forward the other five copies as follows:

Original—To Accounting Division.

Duplicate and Triplicate—To Consignee as shown on invoice.

Quadruplicate—To be forwarded as follows:

When a Resident Engineer is the consignee, the quadruplicate is to be forwarded to, and retained by, the Resident Engineer.

When a Division Engineer or an administrative office in Salem is the consignee, the quadruplicate may be destroyed.

Quintuplicate—To Department Head or Division Engineer.

(The consignee, as used herein, denotes the person to whom the shipment is made.)

When the consignee receives the shipment, he shall count, measure, or weigh the items received, and write the quantities on the duplicate and triplicate copies of the equipment department invoice, in the "Quantity Received" column. The date received, and the signature of the person who received the items, shall be affixed. The duplicate and triplicate copies of the equipment department invoice then shall be forwarded to the person responsible for the property, who is to affix his signature on each of the duplicate and triplicate, and forward both copies at once to the Accounting Division at Salem. The space for the approval of the department head or Division Engineer on the equipment department invoice form is to be disregarded.

### Article 30—Bills Which Exceed $50.00 to be Accompanied by Form No. A-22

All bills for materials and supplies and all expense accounts submitted in excess of $50.00 shall be accompanied by one copy of Form No. A-22. Only the statement of certification, appearing on the lower portion of the form, is to be filled in. The form will be completed by the Accounting Division in Salem.

### Article 31—Record of Tires

(a) Each tire sent out by the Equipment Department will be accompanied by an application form. As soon as the tire is applied, this form shall be filled out and mailed to the Equipment Department. Be absolutely sure that the information given on the form is correct.

(b) Whenever a tire is worn out and removed and sent to the Equipment Department, a tire removal tag (A-101) should accompany the tire. Also great care should be exercised that all the requested information is given correctly.

(c) Whenever a tire is transferred from one piece of equipment to another, the removal and application forms should also be made out, with proper notations on the forms that it is a transfer.

(d) Whenever a piece of equipment is checked out to the job, a tire record card, Form A-98, is placed in it. This card must be kept up to date and left in the equipment at all times.

(e) Whenever a tire or tires ordered on a storeroom requisition are applied on a different piece of equipment than that which was indicated on the original order, the Construction Engineer shall be notified, through regular channels, to this effect, giving the requisition number and date the tire was received. This information is important for equipment cost records, which are not a part of the tire record; hence, it is essential that this information be submitted.

### Article 32—Field Purchase of Car Batteries

No batteries shall be purchased in the field unless extreme emergency exists.

### Article 33—Speedometers

It is essential that speedometers on State equipment be kept in working order at all times.

### Article 34—Field Repairs to Equipment

Except in extreme emergencies, all repairs of consequence to State equipment shall be made by the nearest State shop. Refer to Section 16-26 relative to the procedure to be followed on emergency repairs.

Ordinary repairs, such as brake relining, engine tune-up or overhaul, etc., should be anticipated in advance and the nearest State shop notified in order that they may make the necessary repairs or arrange to replace the equipment needing repairs.

### Article 35—Equipment Rental Report

Equipment Rental report, Form No. A-85 is to be prepared by the person in charge of equipment and submitted to the Division Engineer on the first day of each month. Instructions are printed on the face of the form.

### Article 36—Transfer of Charges and Correction of Erroneous Cost Distribution

Form A-87, Request for Transfer or Correction of Cost Distribution, shall be used when making a transfer of an amount from one prefix and account to another prefix and account, or from one account to another account with the same prefix, whether it represents a transfer from a clearing account, or a correction of an erroneous entry. The data on Form A-87 shall be prepared by the office requesting the transfer or correction. The data at the top of the request shall show the office of origin and its headquarters address, the date of the request, information as to whether a transfer or a correction is being requested, the name and the number (if possible) of the document on which the original or previous charge or credit was made, and the date of that document.

The body of the request shall show the quantity, unit, and description of the items to be transferred, or corrected, the distribution and amount to be charged, and the distribution and amount to be credited. The total of the debit column must, of course, equal the total of the credit column. The reason for the request shall be stated in the space provided therefor, which reason shall include sufficient explanation to convey a clear idea of the circumstances occasioning the change or transfer requested.

When the request is originated by a Resident Engineer, Form A-87 shall be prepared in triplicate and signed by the Resident Engineer. The triplicate shall be retained by the Resident Engineer, and the original and duplicate forwarded to the division office. The Division Engineer will approve both copies, retain the duplicate, and forward the original to the respective Staff Engineer at Salem.

When the request is originated in a division office, Form A-87 shall be prepared in triplicate, and all copies signed by the Division Engineer. The triplicate shall be retained in the division office; the duplicate forwarded to the District Maintenance Superintendent who is concerned

with the accounts shown on the request, and the original forwarded to the respective Staff Engineer at Salem.

In each of the foregoing cases, when the original has been approved by the respective Staff Engineer, it shall be forwarded to the Accounting Division.

In the event that the charge distribution on a request affects one office, and the credit distribution on the same request affects a different office, an additional copy of the request should be prepared and approved, so that an approved copy of the request may be forwarded to each of the offices affected.

Form A-34 Revised—15M Sets—3-40

OREGON STATE HIGHWAY COMMISSION

## PURCHASE REQUISITION

FOR FIELD OFFICES, FIELD CREWS, AND SHOPS

**No 23730**

To REQUISITION OFFICE— Ontario, Oregon

July 2, 1945

Please order the following items to be delivered as stated hereon:

Ship to OREGON STATE HIGHWAY COMMISSION
Care of John J. Jones
Street P.O. Box 438
City Ontario, Ore.
Ship via Parcel Post

Signed [signature]
Approved ..., 19...
Division Engineer—Dist. Maint. Supt.
Approved ..., 19...
Maintenance Engineer

Send bill of lading to ...

All requisitions for construction materials of any kind must show the purpose for which the materials are to be used, and the order to which they are to be charged.

| Quantity Ordered | Unit | DESCRIPTION | Cost Distribution |
|---|---|---|---|
| 1 | only | Electric Fan - 10" oscilating | 3830-471 |
| 1 | only | Electric Desk Lamp | 3830-471 |

Approved for purchase request ...
Purchase request forwarded ...

Purchase Request Number ...
Office Number ...

Follow Instructions on Printed Slip as to Routing of Copies
ORIGINAL—Copy for Requisition Office

STATE PRINTING DEPT.

Form A-35—15M—6-40

OREGON STATE HIGHWAY COMMISSION

## STOREROOM REQUISITION

**No 41265**

To STOREROOM— Albany, Oregon

Sept. 21, 1944

Please furnish the following items to be delivered as stated hereon:

Ship to OREGON STATE HIGHWAY COMMISSION
Care of T.A. Mason
Street P.O. Box 1188
City Albany
Ship via Parcel Post

Signed [signature]
Approved ..., 19...
Division Head
Approved ..., 19...
Maintenance Engineer

| QUANTITY Ordered | Unit | Shipped | Stock Number | For Description: WRITE ONE ITEM ONLY ON EACH LINE | FOR USE OF STOREROOM ONLY: Amount to Be Billed | Unit Cost Price | Cost |
|---|---|---|---|---|---|---|---|
| | | | | Equip. No. 40-58 Cost Distribution | | | |
| 1 | only | | | 6.00 x 16 Tire | | | |
| | | | | Equip. No. 40-58 Cost Distribution | | | |
| 1 | only | | | 6.00 x 16 Tube | | | |
| | | | | Equip. No. Cost Distribution 13-5052-900 | | | |
| 1 | only | | | 100 ft. steel tape | | | |
| | | | | Equip. No. Cost Distribution 13-5052-900 | | | |
| 20 | yd. | | | 24" Imperial Tracing Cloth | | | |
| | | | | Equip. No. Cost Distribution 13-5052-900 | | | |
| 24 | only | | | Wedge pencil tip erasers | | | |
| | | | | Equip. No. Cost Distribution 13-5052-900 | | | |
| 1 | pad | | | Form # A 169 Price Agreement | | | |
| | | | | Totals | | | |

Date shipped ... Storeroom Invoice No. ... Shipped via ...
Date billed ... Filed by ... Checked by ... Storeroom No. ...

STATE PRINTING DEPT.

TRIPLICATE—Copy for Division Engineer or District Maintenance Superintendent

Form A-181—3000 sets—6-41

OREGON STATE HIGHWAY COMMISSION

## REQUEST FOR RELIEF OF PROPERTY

Lost, Stolen, for Sale or Exchange

Worn-out or obsolete property is to be transferred to nearest shop on transfer of property Form A-49

TO STATE PROPERTY COMPTROLLER:

I hereby request relief from responsibility for the following property located at Roseburg, Ore.

| Quantity | Description | Total Cost | Per Cent Good | Present Value | Date and Circumstances |
|---|---|---|---|---|---|
| 1 | Plumb bob | 1.15 | 50 | .58 | Fell out of scabbard into Umpqua River while cutting over-hanging brush. 5/8/45 |
| 1 | Triangle - 12 ", 45° | 1.25 | NG | NV | Disappeard from office and unable to locate when checking inventory. |

CREDIT

If deduction is to be made please credit account No. 10-1461-900

I do solemnly swear or affirm that the articles of State property named hereon were ... lost (Lost, stolen, destroyed) ... in the manner stated while in State service.

Approved: ... Division Head

John Doe ... Person Responsible for Property

Locating Engineer (Title)

Sworn to before me, and subscribed in my presence, this ... day of ... 19...

Must be Notarized

My commission expires ...

After being signed and sealed by a notary, the person responsible for property is to retain goldenrod copy and forward four copies to his Division Head for approval. The Division Head will retain the buff copy and forward three copies to the Property Control Department where the request is to be reviewed and two copies forwarded to the Staff Engineer for his recommendation. The Staff Engineer is to forward the two copies to the Chief Engineer for approval, after which the two copies are to be forwarded to the State Property Comptroller for approval of the Board of Survey. White copy is to be returned to the person responsible for the property. Blue copy is to be forwarded to the Accounting Division.

COPY FOR PERSON RESPONSIBLE FOR PROPERTY

Form A-49 M 1-39
STATE PRINTING DEPT.

OREGON STATE HIGHWAY COMMISSION

## REQUEST FOR TRANSFER OR CORRECTION OF COST DISTRIBUTION

FROM: John M. Smith, Eugene, OREGON

TO: ACCOUNTING DIVISION— DATE June 30 1945

PLEASE Transfer (TRANSFER, CORRECT) THE FOLLOWING ITEMS WHICH WERE ORIGINALLY CHARGED ON Payroll (Survey party) (INDICATE NAME OF ORIGINAL DOCUMENT) No. ... DATE June 1945

(IF VENDOR'S INVOICE, WRITE NAME AND ADDRESS ON THIS LINE)

| QUANTITY | UNIT | DESCRIPTION | CHARGE Distribution | CHARGE Amount | CREDIT Distribution | CREDIT Amount |
|---|---|---|---|---|---|---|
| 1 | day | Time for George W. Brown | 8011-568 | 5 33 | 12-3456-900 | 5 33 |
| | | Vacations & Sick Leave | | | 12-3456-900 | 10 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | TOTAL | | 5 33 | | 5 33 |

REASON FOR THIS REQUEST Vacation time taken June 30th. after payroll was submitted

APPROVED: ... DIVISION ENGINEER
APPROVED: ... STAFF ENGINEER
PREPARED BY ... CLERK
APPROVED ... DISTRICT MAINT. SUPT.

ENTERED ON JOURNAL VOUCHER NO. ...
ENTERED BY ...
DATE ENTERED ...

Form A-40—2500 Sets—3-41

OREGON STATE HIGHWAY COMMISSION

## TRANSFER OF PROPERTY

№ H16570

To T.A. Brown (Consignee—Person Responsible for Property)

Lakeview, Ore. (Address of Consignee)

Date June 26, 1945

To be used for transfer of materials, supplies, small tools and equipment not on rental.

**This form must not be used for transfer of charges only.**

| DESCRIPTION (Including Serial and Department Number) | Total Quantity | Average Per Cent Good | Unit Cost Price | Total Replacement Cost | Unit Price Present Value | Total Present Value |
|---|---|---|---|---|---|---|
| Curves, Spiral Celluloid 10" (set of 23) | 1 | 45 | 32.45 | 32.45 | 14.60 | 14.60 |
| Total | | | | | | 14.60 |

I hereby acknowledge having received from J.A. Doe (Consignor—Person Responsible for Property) of OREGON STATE HIGHWAY COMMISSION, the above listed property valued at $ 14.60, to be used officially in connection with business of the State of Oregon and I agree to be responsible for said property until it is incorporated or consumed in the work of the State of Oregon, or returned, or I am otherwise relieved of such responsibility. Further, I understand that, in the event the property is lost, stolen or destroyed through my negligence, I may be held responsible, and may be called upon to reimburse the State for same.

Received at Lakeview, on the 27 day of June, 1945.

Signed T.A. Brown (Consignee—Person Responsible for Property)

Title Locating Engineer

For Highway Dept. (Commission, Department or Institution)

Approved as to credit: ........ (Department or Division Head)

Approved as to charge: ........ (Department or Division Head)

CHARGE

| Prefix | Function No | Amount |
|---|---|---|
| 19-1433 | 900 | 14.60 |

Consignor to affix credit distribution, retain sixth copy and send five copies to consignor's department or division head for approval as to credit. Department or division head to forward five copies to consignee for signature. Consignee to affix charge distribution and forward five copies to consignee's department or division head for approval as to charge; copies then to be forwarded as indicated at the bottom of each.

1 COPY FOR ACCOUNTING DIVISION

CREDIT

| Prefix | Function No | Amount |
|---|---|---|
| 5015 | 900 | 14.60 |

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OREGON STATE HIGHWAY COMMISSION

## EQUIPMENT TRANSFER REPORT

To John A. Doe

Address Bates, Ore.

Type of equipment Ford Sedan

Equipment No. 38-61

Engine No. 18-4504387 Serial No. ........ Speedometer Reading 45-359 License No. E 4-245

**TIRES**, Size and percentage:
Front, Size 6.00x16 Left 100 % Right 80 % Spare No. 1 40 %
Rear, Size " L. f. 100 % R. f. 100 % Spare No. 2 %
L. r. % R. r. % Sp. Wheel X Rim

**LIGHTS:** Head, Fog, Spot, Clearance; Rear, Stop, Snow, Special

**GLASS:** Front Upper/Lower Cracked; Rear Yes; Ventilator; Side Front Yes; Side Center Yes; Side Rear Yes; Special

**TOOLS:** (General) (Wrenches)
Crank; Hammer; Adjustable Yes; Skein
Jack and Handle: Hydr.; Pump; Crescent; Spark Plug Yes
Screw; Pliers Yes; Hub; Union
Ratchet Yes; Screwdriver Yes; Open End 2; Water Pump
Grease Gun: Alem.; Oil Can; Pipe; Wheel Yes
Zerk; Punch; Rim; Special
Rose; Chisel; Socket; Tool Box

**ACCESSORIES:**
Bumper, Front Yes; Bumper, Rear Yes; Trunk; Tire Chains 2
Extinguisher Yes; Hwy. Marker Yes; Tire Card Yes; Credit Cards Yes
Ign. Key No. Yes; Comp't Key No.; Tire Lock No.; Door Key No.
Padlock; Key; Tire Cover; Mirror Yes; W. S. Wiper 2
Sun Visor 1; Ash Tray 1; Whisk Broom Yes; Horn Yes
Car Heater Yes; Defroster Fan; Radio Rcvr.; Radio Trans.
Side Reflectors; Red Reflector; Inflation Hose; Trailer Hose
Tow Chain; Loading Planks; Chain Tightener; Flare Kit

**SPECIAL ATTACHMENTS:**

Speedometer Ford; Carburetor Stromberg
Fuel Pump Ford; Fuel Gauge Yes
Air Cleaner Ford; Vacuum Tank
Magneto; Distributor Ford
Starter Ford; Generator Ford
Battery Yes; Voltage Reg.
Oil Filter DeLuxe; Oil Gauge Yes
Air Compressor; Air Brake Gauge
Vac. Brake Control; Air Whistle
Body Sedan; Hoist
Power Take-off; Cab
Canopy Top; Curtains
Radiator Yes Cap. qts. Tank Cap. gals.
Gasoline Capacity 14 gallons. Cylinder Oil Capacity 5 quarts
Blades ft. Scarifier Teeth
Flex Pipe, Size in., ft. Hose, Type in. ft.
Burners, Size ... Hose, Type in. ft.
Burners, Size ... Hose, Type in. ft.

RENTAL RATE: $ 33.00 per Month Effective 1-16-44

ADDITIONAL ITEMS (This space to be used for items added to this equipment)

| Date | Ref. | Ref. No. | DESCRIPTION |
|---|---|---|---|
| | | | |

I hereby acknowledge having received from E.F. Halik ........ the above equipment and all tools assigned thereto as listed, to be used officially in connection with the business of the Oregon State Highway Department, and I agree to be responsible for said property until it is returned or I am otherwise relieved of such responsibility. Further, I understand that in the event the property is lost, stolen or destroyed through my negligence, I may be called upon to reimburse the State for same.

Received by John A. Doe Date Jan 16, 1944 Received at Salem, Ore.

Signed [signature] (Person Responsible for Property)

Approved ........ Division Engineer

Date approved ........, 19..

**Transfers from Shop / Transfers in Field**—Consignor retains sixth copy, sending five copies to consignee at time of transfer, for signature. Consignee to sign and forward all five copies to Division Engineer for approval and disposal as indicated at the bottom of each form.

**Transfers to Shop**—Consignor retains sixth copy sending five copies to Division Engineer for approval. Division Engineer to approve and forward all five copies to shop for signature and disposal as indicated at the bottom of each form.

Form A-28—[illegible] STATE PRINTING DEPT

**ORIGINAL—Copy for Equipment Department Office**

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Form A-30—5M—6-44

OREGON STATE HIGHWAY COMMISSION

## PARTIAL SHIPMENT RECEIVING RECORD

RECEIVED FROM State Electric Supply Co.
Salem, Ore.

Ontario, Oregon.

No. 21680 (Use same number as shown on quadruplicate Purchase Order)

| QUANTITY RECEIVED | UNIT | DESCRIPTION | COST DISTRIBUTION |
|---|---|---|---|
| 1 | each | Lamp, Electric Desk, "Flexible Eagle" | 3830-471 |

Complete

This copy is to be prepared by office of origin of order on which there is a partial shipment. Copy description of items not received, and information shown on quadruplicate Purchase Order, and forward to consignee. **Do not copy quantities.**

I certify that the items listed above were received by me in good condition and in the quantities as indicated.
Signed: J. Jones
Date received 7/22/45

Consignee is to record quantities of items received, sign and forward to office of origin of order where this record is to be compared with Purchase Order, and then forwarded to accounting division.

STATE PRINTING DEPT.

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FORM A11 10M SETS 6-45

OREGON STATE HIGHWAY COMMISSION

## EQUIPMENT DEPARTMENT INVOICE

№ 161

SALEM, OREGON

John A. Doe
Elgin, Oregon

DATE BILLED 2/26/45
REQUISITION NO. 58410-776
DATE SHIPPED 2/23/45

| QUANTITY BILLED | UNIT | QUANTITY RECEIVED | DESCRIPTION | EQUIPMENT NUMBER | COST DISTRIBUTION | AMOUNT CHARGED | COST VALUE UNIT PRICE | COST VALUE AMOUNT |
|---|---|---|---|---|---|---|---|---|
| 2 | Pads | 2 | Traverse Sheets, Form E-38 | | | 1 03 | .45 | 86 |
| 10 | Only | 10 | Loose Leaf Rings | | | 36 | .03 | 30 |
| 1 | Only | 1 | OSHD Spiral Table Filler | | | 82 | .68 | 68 |
| 12 | Only | 12 | Vermillion Pencils | | | 86 | .06 | 72 |
| | | | TOTAL | | 51-1809-900 | 3 07 | | 2 58 |

(S) J.A. Doe (PERSON RESPONSIBLE FOR PROPERTY)

Locating Engineer (TITLE)

I HEREBY ACKNOWLEDGE HAVING RECEIVED THE PROPERTY AND SUPPLIES AND/OR SERVICES AS LISTED ABOVE. IT IS UNDERSTOOD THAT ALL PROPERTY LISTED ABOVE IS TO BE USED OFFICIALLY IN CONNECTION WITH BUSINESS OF THE OREGON STATE HIGHWAY COMMISSION AND I AGREE TO BE RESPONSIBLE FOR SAID PROPERTY UNTIL IT IS INCORPORATED OR CONSUMED IN THE WORK OF THE HIGHWAY COMMISSION, OR RETURNED, OR I AM OTHERWISE RELIEVED OF SUCH RESPONSIBILITY. FURTHER I UNDERSTAND THAT, IN THE EVENT THE PROPERTY IS LOST, STOLEN OR DESTROYED THROUGH MY NEGLIGENCE I MAY BE HELD RESPONSIBLE AND MAY BE CALLED UPON TO REIMBURSE THE STATE FOR SAME.

SIGNED (S) JA Doe DATE 2/28/45

**TRIPLICATE—TO CONSIGNEE**—CONSIGNEE IS TO ENTER QUANTITIES RECEIVED, SIGN, AND FORWARD THROUGH REGULAR CHANNELS TO ACCOUNTING DIVISION AT SALEM FOR PROPERTY CONTROL DEPARTMENT.

FORM A85 TWO SETS—3-41

OREGON STATE HIGHWAY COMMISSION

# EQUIPMENT RENTAL REPORT

HIGHWAY *Wallowa Lake*

CHARACTER OF WORK *Engineering*

SHEET NUMBER *1* OF *1* SHEETS

MONTH *April* 1945

| Equip. No. | Description / Speedometer Reading / Mileage for Period | Cost Distribution: Prefix | Cost Distribution: Account Number | Class | Days or Shifts Used | Total Days or Shifts | Rate | Amount | Total | Equipment Received or Transferred: Date | From or To |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 38-17 | Ford Sedan | 31-1809 | 900 | | X X X X X X X X X X X X X X X | 15 | 22.50 | 11 25 | | | From: |
| | | 31-1811 | 900 | | X X X X X X X X X X X X X X X | 15 | " | 11 25 | | | To: |
| | 70,621 | | | | | | | | 22 50 | | |
| | 1183 | | | | | | | | | | |
| 40-12 | Chev. Station Wagon | 31-1811 | 900 | | X X X X X X X X X X X X X X X | 15 | 37.50 | 18 75 | | 4/16/45 | From: LaGrande Shops |
| | 45,403 | | | | | | | | | | To: |
| | 622 | | | | | | | | 18 75 | | |
| 167432 | K&E Transit | 31-1811 | 900 | | Full Month | 30 | 3.00 | 3 00 | | | From: |
| | | | | | | | | | 3 00 | | To: |
| 7812 | K&E Level | 31-1809 | 900 | | Full Month | 30 | 2.00 | 2 00 | | | From: |
| | | | | | | | | | 2 00 | | To: |
| | | | | | | | | | | | From: |
| | | | | | | | | | | | To: |
| | | | | | | | | | | | From: |
| | | | | | | | | | | | To: |
| | | | | | | | | | | | From: |
| | | | | | | | | | | | To: |
| | | | | | | | | | | | From: |
| | | | | | | | | | | | To: |
| | | | | | | | | | TOTAL OF ALL SHEETS | 46 25 | |

## INSTRUCTIONS

THIS REPORT TO BE PREPARED AT THE END OF EACH MONTH, SHOWING ALL EQUIPMENT ON RENTAL BASIS ON HAND AT THE CLOSE OF THAT MONTH, AND INDICATING ALL EQUIPMENT RECEIVED OR TRANSFERRED DURING THE MONTH, STATING FROM WHOM OR TO WHOM TRANSFERRED AND DATE.

MAKE SEPARATE REPORT FOR EACH MAINTENANCE SECTIONMAN IN ORDER TO KEEP ACCURATE LOCATION RECORDS OF EQUIPMENT AND SIMPLIFY DISTRIBUTION OF CHARGES, USING TWO SHEETS OR MORE IF NECESSARY WITH A NOTATION IN UPPER RIGHT CORNER OF NUMBER OF SHEETS USED. SHOW RENTAL OF EQUIPMENT BY INDICATING THE SHIFTS WORKED IN SPACES UNDER THE PROPER DATES.

THE TRANSFER OF ALL EQUIPMENT OUT ON RENTAL MUST BE REPORTED ON FORM A-29.

THE SPEEDOMETER READING AND THE MILEAGE FOR THE PERIOD MUST BE GIVEN ON EACH CAR AND TRUCK REPORTED HEREON.

DISTRIBUTION: WHITE AND GOLDENROD COPIES TO EQUIPMENT DEPARTMENT. BUFF COPY TO THE DIVISION ENGINEER OR BRIDGE ENGINEER AND PINK COPY TO BE RETAINED BY PERSON SUBMITTING THE INVENTORY.

EQUIPMENT IN CHARGE OF: *John A. Doe* ENGINEER—FOREMAN

LOCATED AT: *Elgin, Ore* HEADQUARTERS

REPORT SUBMITTED BY: *J. A. Doe* RES. ENGINEER—DIST. MAINT. SUPT

REPORT CHECKED IN EQUIPMENT DEPARTMENT

(Back of form A85)

## SUMMARY OF EQUIPMENT RENTALS

| Description | Equip. No. | Rental | Cost Distribution Summary: Prefix | Account Number | Amount |
|---|---|---|---|---|---|
| Ford Sedan | 38-17 | 22 50 | 31-1809 | 900 | 13 25 |
| Chev. Station Wagon | 40-12 | 18 75 | 31-1811 | 900 | 33 00 |
| K&E Transit | 167432 | 3 00 | | | |
| K&E Level | 7812 | 2 00 | | | |
| | | | | TOTAL | 46 25 |
| | | | | TOTAL | 46 25 |

REMARKS.

FORM A-16 REVISED-25M-12-39

OREGON STATE HIGHWAY COMMISSION

## FIELD EMERGENCY PURCHASE REQUISITION

INVOICES MUST BEAR THIS No. F 16206

TO Oregon Motor Co.
Vale, Oregon

DATE May 14 1945

GENTLEMEN: PLEASE DELIVER THE FOLLOWING ITEMS TO J.M. Smith AND CHARGE TO OREGON STATE HIGHWAY COMMISSION. SEND INVOICES IN QUADRUPLICATE TO OREGON STATE HIGHWAY COMMISSION - ACCOUNTING DIVISION, SALEM, ORE.

| QUAN. ORDERED | UNIT | DO NOT WRITE IN THIS SPACE | DESCRIPTION | UNIT PRICE | COST DISTRIBUTION |
|---|---|---|---|---|---|
| 1 | each | | Fuel pump for Ford car | 1 85 | car 38-18 |
| | | | Labor installing fuel pump - 2½ hr. @ $1.50 | 1 00 | " 38-18 |
| | | | | | |
| | | | | | |
| | | | | | |

NOTE TO VENDOR: IF YOUR INVOICE CONTAINS LABOR, KINDLY SHOW HOURS AND HOURLY RATE, OR IF FLAT RATE PLEASE SO STATE ON THE INVOICE.

ORIGINAL - VENDOR'S COPY

ORDERED BY: J.M. Smith

REDIFORM - PATENTED - PACIFIC MANIFOLDING BOOK CO., INC. - PORTLAND, ORE.

---

Oregon State Highway Commission

Tire Information Required for Each Tire

Fill out and send to the Equipment Department when Application is made.

Make Lee

Serial No. 88N24673

Size 6.00X16

Date Applied 3/29/45

Equipment No. 38-17

Speedometer Reading 76,542

Assigned to John A. Doe

Signed John A. Doe

Address Elgin, Ore

Date 4/2/45

---

FORM NO. A-88 2M 12-43

## TIRE MILEAGE CARD

EQUIPMENT No. 38-17 DRIVER John A. Doe

| TIRE NO. | MAKE | SPEEDOMETER READINGS ON | OFF | ON | OFF | ON | OFF | TOTAL MILEAGE |
|---|---|---|---|---|---|---|---|---|
| 97Z43867 | Firestone | 37,365 | 46,871 | 53,906 | 68,481 | 69,538 | 76,542 | 31,085 |
| 68Z57964 | " | 41,405 | 55,908 | 61,782 | | | | |
| A8745361 | Lee | 48,672 | 61,782 | 62,843 | | | | |
| A9277015 | Lee | 48,672 | 62,843 | 68,481 | 69,538 | | | |
| 65Z56901 | Firestone | 46,871 | 53,906 | 55,908 | | | | |
| 88N24673 | Lee | 76,542 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

STATE PRINTING DEPT.

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Make Firestone Size 6.00X16

Serial No. 97Z43867 Total Mileage Run 31,085

Removed from Equipment No. 38-17 Date 3/29/45

Remarks Worn out

From John A. Doe Address Elgin, Ore.

INSTRUCTIONS

This card is to be removed and held while this tire is in service. When the tire is taken out of service the data asked for is to be filled in and the card *mailed as addressed* on reverse side.

STATE PRINTING DEPT.

FORM A-31 30M SETS 1-45 STATE PRINTING DEPT.

OREGON STATE HIGHWAY COMMISSION

## SHOP GAS, OIL AND GREASE TICKET

SHOP AT La Grande OREGON

EQUIPMENT No. 40-36 LICENSE No. Nº 5525

SPEEDOMETER READING 61,074 DATE 3/13 1945

| | UNIT | QUAN. | UNIT PRICE | AMOUNT |
|---|---|---|---|---|
| GASOLINE | GAL. | 10 | 17½ | 1.75 |
| OIL (B. A. E.) | QT. | | | |
| GREASE (ESSO) | LB. | | | |
| KEROSENE | GAL. | | | |
| STOVE OIL | GAL. | | | |
| DIESEL OIL | GAL. | | | |
| TOTAL | | | | 1.75 |

RECEIVED BY John Doe

DELIVERED BY Paul Doe

COST DISTRIBUTION

FOR ITEMS NOT USED ON EQUIPMENT FOR MAINTENANCE WORK

5015-900

DUPLICATE—COPY FOR DRIVER OF EQUIPMENT TRANSFERRED TO THE FIELD TO BE TURNED IN TO THE FIELD OFFICE. COPY FOR OTHER EQUIPMENT TO BE FORWARDED WITH ORIGINAL TO ACCOUNTING DIVISION

FORM A-33 13M SETS 11-44 STATE PRINTING DEPT.

OREGON STATE HIGHWAY COMMISSION

## GAS, OIL AND GREASE TICKET

CHECK IF STATE POLICE CAR ☐

CHECK IF OTHER CAR ☒

Nº 110001

PUMP LOCATED AT Redmond PUMP No. 6

EQUIPMENT No. 40-36 LICENSE No. DATE 3/15 1945

| | UNIT | QUAN. | UNIT PRICE | AMOUNT |
|---|---|---|---|---|
| GASOLINE | GAL. | 10 | 17½ | 1.75 |
| OIL (B. A. E.) | QT. | | | |
| GREASE (ESSO) | LB. | | | |
| KEROSENE | GAL. | | | |
| STOVE OIL | GAL. | | | |
| DIESEL OIL | GAL. | | | |
| TOTAL | | | | 1.75 |

RECEIVED BY John Doe

DELIVERED BY Paul Doe

COST DISTRIBUTION

FOR ITEMS NOT USED ON EQUIPMENT FOR MAINTENANCE WORK

5015-900

ORIGINAL—MAINTENANCE PUMP ATTENDANT TO FORWARD TO DIST. MAINT. SUPT. PORTABLE PUMP ATTENDANT TO FORWARD TO MAINTENANCE ENGINEER.

# THE STATE OF OREGON

To ..... Dr.

NOTE—All claims must state in detail dates of service, or date supplies were furnished, rate per day, month or year, or price per unit. Claims not showing these items will be returned for correction.

| Date Vouchered | NATURE OF CLAIM | AMOUNT |
|---|---|---|
| | For ..... the Oregon State Highway Commission, as per details attached: | $ |

Note: Fill in only statement of certification below, attach expense statement, bills, etc., and forward to the Division Engineer. (Form-A-22)

CERTIFICATE

This is to certify that the goods, wares, or merchandise covered by this claim, or the services, cash advanced, or expenses herein set forth, have been received, rendered, expended or incurred, as the case may be, on behalf of the State of Oregon.

OREGON STATE HIGHWAY COMMISSION

By ..... Claims Auditor

FOR USE ONLY OF DEPARTMENT OF STATE

Audited and approved by .....

Period covered .....

Items .....

Prepared by:

Checked by:

Total amount claimed, $

Total amount allowed, $

I, John O. Doe (Name),

hereby certify that I am Street Inspector (If firm or corporation, state capacity in which employed);

that I have knowledge of the above-described and attached claim; that the foregoing account is correct and just; that the service (Material or service) therein specified has been rendered (Has been furnished or rendered) the State of Oregon as stated,

that the charge therefor is reasonable, and that no part thereof has been heretofore paid.

PERSON MAKING CERTIFICATION SIGN HERE John O. Doe (Name)

Warrant No. E..... issued in payment of the within claim.

## SECTION 17. ESTIMATES AND REPORTS

*Article*

1. Division Engineer to Transmit Records.
2. Submit Corrected Estimates of Cost Prior to Letting.
3. Prepare Estimates for all Surveys.
4. Monthly Estimate on Contract Jobs.
5. Quantity Summary to Accompany all Monthly Estimates.
6. Final Estimate to be Submitted on Construction Jobs.
7. Submit Detailed Report on Surveys.
8. Weekly Report for Surveys.
9. Weekly Report for Construction Projects.
10. Reports to be Made by Street Inspector.
11. Reporting of Quantities of Materials Used on Federal Aid Projects.
12. List of Forms.

### Article 1—Division Engineer to Transmit Records

All original data, maps, profiles, cross sections, field notes, coordinate sheets, etc., are to be transmitted to the Division Office (under whose jurisdiction the project lies) upon completion or suspension of the project. The Division Office will transmit to the Salem office all records to substantiate estimates submitted and retain those records which in the opinion of the Division Engineer will be necessary to complete or extend the project.

### Article 2—Submit Corrected Estimate of Cost Prior to Letting

It is very convenient to have a revised estimate of cost for contract jobs submitted about four days prior to the letting of the job. These costs should be corrected to cover any additional data which may have been received since the submission of the original estimate. Frequently the contractors indicate a like or dislike for certain jobs and point out features which would not have occurred to the Engineering Department. Care should be taken to reflect these opinions in the revised estimates, as it is quite important to have the estimate for the comparison of bids approximate the average bid received, and it invites considerable criticism to have our estimates entirely out of line with the bids. The Resident Engineer will submit such estimates to the Division Engineer for submission to the Salem office.

### Article 3—Prepare Estimate for all Surveys

(a) *Quantity Summary to be Made by Miles*—For all reconnaissance, preliminary and location surveys, estimates of quantities and cost shall be made in as great detail as is consistent with the nature of the survey. On preliminary and location work, the estimate should be made up by miles summary and total shown on the profile and in the detailed report. The cost estimates should only appear in the report.

(b) *Indicate Design Features Used in Estimating*—All estimates should state clearly the basis upon which they are made; viz: width and type of roadbed and surface, side slopes in cut and fill, maximum gradient, minimum curve radius and whether the quantities are based on preliminary or location cross sections or by other means. Every estimate should be dated and signed.

(c) *Finishing Roadbed and Slopes, Trench Excavation and Structural Excavation*—All grading and regrading contracts will include bid items for "Finishing Roadbed and Slopes", "Trench Excavation" and "Structural Excavation".

The item "Finishing Roadbed and Slopes" will apply to the trimming and finishing of cut and fill slopes, the cleaning out of side ditches and such work as is necessary in finishing the roadbed, including shoulders, to grade and cross section. It will not apply to work that has been paid for under other bid items, such as preparation of roadbed for bituminous macadam or fine grading for pavements. In other words, it is intended to cover the final finishing of slopes, roadbed section, including side ditches, on grading and regrading projects only. This item will be paid for at the unit price bid per mile, the length to be measured to the nearest one-hundredth.

The item "Structural Excavation" will comprise and include all excavation for bridges, retaining walls, headwalls, box culverts, pipe culverts, siphons, sewers, tile drains and other structures (excepting curbs, gutters, pavements, sidewalks and like facilities which lie wholly above the subgrade).

"Trench Excavation" shall comprise and include all excavation for open ditches, excepting cut ditches, borrow ditches and other ditches in the roadway section and excepting channel changes in natural waterways.

(d) *List of Bid Items*—The following list may be used as a guide to avoid the omission of important features. All items in estimates are to be shown in the order listed.

1. Clearing and Grubbing.
2. Trench Excavation.
3. Structural Excavation.

4. Common Excavation.
5. Intermediate Excavation.
6. Solid Rock Excavation.
7. Short Overhaul.
8. Long Overhaul.
9. Finishing Roadbed and Slopes.
10. Rounding Cutbanks.
11. Culvert Pipe (small sizes first).
12. Drain Tile.
13. Rock Backfill.
14. Concrete, Class A, B and C.
15. Reinforcing Steel.
16. Rubble Masonry.
17. Riprap.
18. Catch Inlets.
19. Selected Roadbed Topping.
20. Bridge Structures.
21. Grade Crossing Elimination Structures.

(e) *List of Items to Accompany Estimate*—The following data and information shall be prepared by the Resident Engineer and submitted to the Division Engineer for each survey:

1. Detail Map. (See Section 11, Article 6.)
2. Vicinity Maps. (See Section 11, Articles 10 and 11.)
3. Form 61, "Bridge Construction Survey Data". (See Section 11, Article 11.)
4. Profile. (See Section 5, Article 41, and Section 11, Articles 12, 13 and 15.)
5. Right of Way Descriptions. (See Section 9, Articles 13 and 14.)
6. Descriptions for Stockpiles, Quarries, Etc. (See Section 9, Article 2.)
7. Form E-47 to Accompany Each Description. (See Section 9, Article 4.)
8. Form E-29 to Accompany Each Description. (See Section 9, Article 15.)
9. Location Engineer's Right of Way Report. (See Section 9, Article 12.)
10. Field Notes. (See Section 9, Article 14, and Section 7.)
11. Coordinate Sheets. (See Section 11, Article 4.)
12. Form 525. (See Section 15, Article 10.)
13. Platted Cross Sections. (See Section 6, Article 11.)
14. Earthwork Computations. (See Section 5, Article 39, Section 6, Article 12, and Section 7, Article 8.)
15. Mass Diagram. (See Section 5, Articles 40-45.)
16. Estimate. (See Section 17, Articles 2 and 3.)
17. Preliminary Draft of Specifications. (See Section 1, Article 6.) *Note:* Item No. 17 is to be prepared by the Resident Engineer as an aid to the Division Engineer.
18. Detailed Report. (See Section 17, Article 7.)

### Article 4—Monthly Estimates on Contract Jobs

The Resident Engineer shall prepare a monthly estimate for work performed under each contract.

(a) *Dates to Prepare Estimate*—This shall be made up on Monthly Estimate Form No. A-144, to include the work done up to the 10th of the month for Divisions 4 and 5, and up to the 15th of the month for Divisions 1, 2 and 3. The Resident Engineer shall arrange his work to have these estimates in the mail on these dates.

(b) *Estimates to be Transmitted to the Division Engineer*—All monthly estimates shall be mailed by the Resident Engineer to the Division Engineer for the latter's approval before transmittal to the Salem office. Submit three copies for state projects and four copies for federal aid projects. (For semi-final estimates, submit four copies for State and five copies for Federal Aid projects.)

(c) *Number Estimates Consecutively*—Estimates for each job shall be numbered consecutively by beginning with the number "one".

(d) *List All Quantities Completed*—The quantities to be listed are the total quantities from the beginning of the job to the date of the estimate.

(e) *Show All Quantities in Detail*—The estimate sheet should show quantities in detail. Each culvert shall be listed separately, showing the amount of pipe, concrete, steel, structural excavation and all other items entering into its construction. Grading should be estimated in as small units as practicable; i. e., by individual cuts, by work handled by different sub-contractors, by sections of different classifications, etc.

(f) *Show Item in Proper Sequence*—Columns shall be headed with the same notation and sequence as they appear in the contract, as:

1. Clearing and Grubbing.
2. Trench Excavation.
3. Etc. (See Section 17, Article 3.)

(g) *Show Price Agreements on Estimate*—All price agreement items shall be shown on the monthly estimate sheet following the listing of the regular contract items. Force account items shall not be shown on this form. Form A-100 "Record of Extra Work Bills" shall be prepared and submitted with each estimate having extra work. (See Section 14, Article 3.)

(h) *Estimates Covering Federal Aid Projects*—In submitting estimates covering Federal Aid projects, a segregation of quantities between the State project and the Federal Aid project or projects should be made in accordance with the summary shown on the plans under the heading "Segregation of Quantities".

(i) *Allowance for Materials on Hand*—Allowance for materials delivered and held in storage on the job shall be made in conformance with the provisions set forth in Section 8-7 of the standard contract specifications.

### Article 5—Quantity Summary to Accompany All Monthly Estimates

Quantity summaries accompanying field estimates on contract projects are to be submitted on Form 42-A.

The information is to be listed on the form in the manner illustrated on the sample sheet at the end of this section. Note, in particular, that all work under price agreements, orders for extra work and state force orders, is listed separately for each order, and the number of each order and a brief description of the work is given so that it may be easily recognized. Work that is to be performed under one of these classifications, but for which no order has been submitted, should be listed and described in the manner illustrated on the sample Quantity Summary Sheet, "Hand Sloping Slide Area".

Until such time as all contingencies have been definitely listed in the manner described above, an additional lump sum may be included as "Other Contingencies Anticipated", sufficient to cover all work which may be necessary to perform, but for which the Resident Engineer is not prepared to give a definite description or estimate of cost as it will appear on the order.

Engineering and State force expenditures will not be included in the column headed "Performed Since Last Estimate".

The space in the lower left-hand corner of the sheet which is provided for "Total authorizations approved to date", is to include the original project authorization plus such additional amounts as have been authorized on approved copies of orders returned from the Salem office. At the completion of the project the amount shown in this space should be equal to or greater than the total cost shown under "Performed to Date".

The information supplied on this form is used in compiling reports showing status of contract projects and in various other phases of office work. For this reason it must be accurate and dependable. The Resident Engineer will be expected to exercise every care in preparing the form and in correcting quantities and costs whenever necessary to show the correct ultimate cost of the project.

It is particularly important that the "Estimated date of completion" be determined with the greatest possible accuracy and be corrected each month as the work progresses.

Five copies of this summary shall be made for both State and Federal Aid projects, four of which are to be submitted to the Division Engineer, who will retain one copy and forward the other copies to the Salem office after his approval. The fifth copy shall be retained by the Resident Engineer for his files.

### Article 6—Final Records to be Submitted on Construction Projects

During the progress of the job, the Resident Engineer shall have a complete set of final records worked up and have them in such shape that they may be completed and turned in to the Division Engineer immediately after the construction work is finished.

Before submitting the final records, a final index of all the quantities shall be prepared. This index shall start with the first general item and shall take in each item consecutively through the contract including the price agreements and those items, payment for which is set out in the contract, such as screen rejects, etc. The index shall give the station number, the book and page number of the notes and/or the book and page number of the calculations, if separate from the notes, of each and every miscellaneous item coming under the general contract items. The final index should be prepared in a form similar to the following sample:

(Sample)

FINAL INDEX

Bear Creek-Deer Creek Section
Pacific Highway

Job prefix 10-1108 Contract No. 2100

| *Item No.* | *Estimate Sheet No.* | *Line No.* | *Book No.* | *Page No.* | *Quantity and Unit* | *Totals* |
|---|---|---|---|---|---|---|
| 1 | 1 | 1 | Clear and Grubb. | | 100% | 100% |
| 2 | 1 | 14 | 1 | 8 | 2.4 cy | |
| 2 | 1 | 15 | 1 | 9 | 3.3 cy | |
| 2 | 1 | 18 | 1 | 12 | 38.5 cy | |
| 2 | 1 | 21 | 1 | 16 | 26.4 cy | 70.6 c.y. |
| 3 | 1 | 14 | 1 | 8 | 4.5 cy | |
| 3 | 1 | 15 | 1 | 9 | 8.1 cy | |
| 3 | 1 | 16 | 1 | 10 | 24.2 cy | |
| 3 | 1 | 17 | 1 | 11 | 8.7 cy | 45.5 c.y. |
| 4 | 1 | 2 | 3 | 12–18 | 1600.3 cy | |
| 5 | 1 | 3 | 3 | 25–32 | 861.5 cy | |
| 6 | 1 | 4 | 3 | 37–45 | 1243.7 cy | Etc. |

(List all items in the above form. Miscellaneous items as follows.)

(Sample)

FINAL INDEX—Continued

| Item No. | Estimate Sheet No. | Line No. | Book No. | Page No. | Quantity and Unit | Totals |
|---|---|---|---|---|---|---|
| | | | PRICE AGREEMENT No. 1 | | | |
| | 1 | 24 | 6 | 22 | 39 lin. ft. | |
| | | | EXTRA WORK ORDER No. 1 | | | |
| | 2 | 1 | 9 | 38 | 241.6 c.y. | |
| | | | PRICE AGREEMENT No. 2 | | | |
| 1 | | | 6 | 73 | 620 lin. ft. | |
| 2 | | | 7 | Pl. Sec. and Comp. sheet. | 481.2 c.y. | |

If quantities, such as excavation for structures, are combined on the Final Estimate sheet, the final index should show the location of such quantities by station numbers.

The following final records must be submitted:

Construction map.
Construction profile.
Transit notes.
Platted sections.
Earthwork computation sheets.
Field notes.
Duplicates of material receipts and weigh tickets.
Mass diagram.
Summaries, haul charts, sketches and other data pertinent to the computation and tabulation of the items which make up the final estimate.
Final estimate sheets. (Four copies to be submitted for State projects. Five copies to be submitted for Federal Aid projects.)
Quantity summary sheets. (Four copies to be submitted for both State and Federal Aid projects.)
Report of quantity of materials used on Federal Aid projects.

This list refers only to supporting data for the final quantities. Additional forms as required by the Department must be submitted.

*Construction Map*—At the completion of each grading job, a complete map should be submitted. This map should be the original field location map, showing all revisions and corrections made during the construction operations, and the map should be retitled "As Constructed". No effort should be spared to obtain the location map, but, if the location map cannot be found, a new "Construction Map" must be submitted. This map should show not only the alignment, drainage and other construction features, but it should also show the ties made to section corners and other property subdivisions, locations of buildings, relocations of buildings which have been moved during construction, etc.

A map need not be submitted upon the completion of surfacing, oiling and paving jobs unless there have been alignment changes made which differ from the maps and previous data on file in the Salem office. Alignment changes are not meant to apply to small discrepancies such as a few tenths in distance or a minute or two in angles. Where such discrepancies are discovered, they should be ignored and the original alignment be considered as being correct. If no map is submitted, the notes should state definitely that no alignment changes were made and they should list any additional features which should be added to the map on file in the Salem office as a result of the new construction.

*Construction Profile*—A construction profile should be submitted at the completion of each grading job and at the completion of surfacing, oiling and paving jobs when the grade line as established prior to the opening of such jobs has been changed. The profile should show the distribution of quantities, alignment, reference points, grade line, bench marks, drainage structures, typical sections, etc.

*Transit Notes*—Transit notes should be submitted at the completion of all grading jobs and at the completion of surfacing, oiling and paving jobs when the alignment has been changed from the previous data on file in the Salem office. Corrections should not be made for small discrepancies, such as a few tenths in distance or a minute or two in angles, found in the previous alignment data. Such small discrepancies should be ignored and the original data adopted as being correct. The transit notes should show reference ties, ties to section corners and property lines, building ties, etc.

*Platted Sections*—Platted roadbed sections shall be made up on sheets of cross-section paper 11″ wide (10″ engraved) and 14″ long, or longer sheets, if necessary, which will fold to 14 inches. If the original ground notes and final grade or remeasure notes are taken and correlated to each other as outlined under "Field Notes", Section 7, Article 8, so that computations of areas can be made directly from the notes, platted sections will not be required. However, if the field notes are taken in such a manner that the correlation between the original and

the finished section can only be shown on the platted sections, then platted sections must be submitted and all data pertaining to the section must be transferred to the platted section and checked back to be sure it is right.

If the field notes are recorded so that areas may be computed directly therefrom, platted sections need not be made up for stockpile sections or for drainage ditch and culvert excavation sections.

*Field Notes*—Field measurements or other data should be submitted in support of every item shown on the final estimate, including those items covered by price agreements. Price agreements cannot be accepted as final supporting data, as quantities shown thereon are always subject to correction.

Level notes should be recorded separately and not mixed with the regular cross section notes.

The loose leaf field notes should be made up into books not exceeding about one inch in thickness and on the cover of each book should be lettered the county, highway, section, contract number, prefix, dates, engineer's name, and the kind of notes contained in the book. On the first inside leaf of each book which covers a number of items should appear an itemized index of the book showing page numbers where each item is recorded.

Culvert notes should show the location with reference to highway centerline and the grade elevations. Notes for small structural excavations with vertical sides, such as small culvert and drainage excavations, are best if an average longitudinal section is taken, the area of which multiplied by the width of the trench gives the volume. When the notes for such sections are perfectly clear and legible, there is no need for platted sections.

On paving jobs through cities, sketches should be submitted to show pavement, driveway, sidewalk and curb removal. Separate sketches should be submitted to show new construction of driveways, curbs, and sidewalks and irregular-shaped pieces of pavement such as at street intersections. Sketches of irregular-shaped pieces of pavement should show clearly the expansion and contraction joints installed. The transit sheet is best for making up these sketches, using the right page for the sketches and the opposite or left page for the notes and computations.

*Material Receipts and Weigh Tickets*—Fill out tickets as per instructions attached to the book of tickets. In computing the haul on a load of material where the contents of the load are distributed in more than one-half-mile unit, compute the haul for that load as if the total load was distributed in the farthest unit.

*Mass Diagram*—When cross sections are taken close together, compute mass ordinates for points which are about fifty feet apart, ignoring the intermediate points. Do not compute balance lines closer than the nearest cubic yard ordinate or the nearest tenth in stations. Show distribution of material on the mass diagram and on the final construction profile. Each cubic yard hauled over 1,200 feet shall be credited with 6 yd. stas. of "Short Haul" in addition to the "Long Haul" computed.

*Haul Adjustments*—A haul adjustment is caused by a change in the distribution of materials, i. e., by changing the amounts of material in the stockpiles or changing the locations of the stockpiles from the amounts and locations that were set out in the "Tentative Plan of Distribution". A change in the source or sources from any prospective source or sources which might be mentioned in the specifications does not cause a haul adjustment. If the materials are delivered in exact accordance with the "Tentative Plan of Distribution" there is no haul adjustment to be made, regardless of where the material was hauled from.

*Miscellaneous Data*—"Finishing Roadbed and Slopes" and "Preparation of Subgrade". Notes which show all equations, lengths of bridges, wye connections, etc., should be submitted showing how mileage was arrived at. Sketches should be made of wye connections. Notes should be submitted even when there are no equations, bridges or wye connections, as it should not be left to assumption that the mileage given is correct when it checks with the distance between stations as shown on the final estimate.

Haul data should give the station or mile point limits of the various units of haul. The lengths of hauling roads, equations in stationing and all data necessary to check the station limits of the haul units should be given. Haul should be computed from the quarry, pit, or unloading point if shipped by rail or boat direct to the point of deposit; not from the crushing or processing plant, except in the case of screen

rejections. See Section 24-6 of the General Specifications.

Haul for screen rejects should be computed from the bunkers or the point where they are delivered into trucks to be hauled out to the stockpile. When screen rejects are taken in State trucks at the contractor's bunkers, there is no pay item.

We have no standard specification which covers hauling screen rejects onto the road by the contractor other than as filler material. If screen rejects are used on the road other than as provided in the specifications, a price agreement must be executed to provide for payment for same.

*Summaries*—On all jobs which have a large number of items such as paving jobs through cities, a final summary or index of all the items shown on the estimate shall be submitted.

The earthwork computation sheets should show the final areas and volumes of the roadbed and borrow sections, the mass computations and summary of the pay excavation.

*Engineer Held Responsible for Records*—The Resident Engineer will be held strictly responsible for the accuracy of all final notes and records and shall see that they are carefully checked and indexed before he turns them in to the Division Engineer's office.

*Overrun or Underrun of Contract Items*—One of the requirements of the Government on all Federal Aid projects is to furnish them with an explanation of all items for contracts which vary 10 per cent or more from the preliminary estimate. This explanation is to cover overruns as well as underruns.

Resident Engineers shall check semi-final estimates carefully at the time of transmittal to the Division Office and shall include with the record sent the Division Office a written explanation of items that show a variation of 10 per cent or more.

*Construction Engineer's Statement*—Two copies of "Construction Engineer's Statement" form will be submitted with the final records for each job.

*Letter of Transmittal*—A copy of the letter of transmittal for final records shall be marked "Attention: Checking Engineer" and be enclosed with the letter to the Division Engineer.

### Article 7—Submit Detailed Report on Surveys

A detailed report shall be prepared by the Locating Engineer upon the completion of every survey. This report should contain all information in connection with the survey that cannot be shown upon the maps and other records submitted. It should also contain a general summary of the important features shown in detail on the maps and other records.

It should state the purpose of the survey, describe its limits and the locality traversed, describe other possible routes, outline the methods of survey and the various considerations entering into the selection of the route, and the adoption of particular types of construction, with suggestions as to the procedure necessary to prepare the work for construction, giving such information in regard to the attitude of property owners and citizens as has been obtained locally or otherwise, describe all possibilities of future trouble in securing rights of way, crossings of railroads, navigable streams, etc. It should contain a tabulation of the costs of the survey, showing the costs of the different items involved and giving the per mile costs of the field and office work. It should also give a summary of such important features as length of line, type of roadbed, maximum gradients, maximum degree of curve, estimated cost of construction (total and per mile) and any recommendations deemed necessary.

This report should give complete status of survey covering such points as:

How much of the line has been staked and referenced?

Have the 100′ and 400′ maps, profile tracing, vicinity maps and descriptions been finished and mailed to Division Office?

Where are the notes, coordinate sheets, cross sections, mass diagram, etc.?

This report is to be accompanied by a letter size sketch map showing the location of and giving a description of all buildings within the proposed right of way.

The body of the report shall cover in complete detail the conditions that make it necessary to hit such buildings.

### Article 8—Weekly Report for Surveys (Form E-114)

A "Field Engineer's Weekly Report for Surveys Only", Form No. E-114 shall be prepared, covering a full calendar week, and placed in the mail so that a copy will reach the Construction Engineer in Salem not later than Monday morning of the following week.

The back of the form should be completely filled in and the text of the report should give a comprehensive picture of the activities of the

party and the progress of the survey for the foregoing week. Changes of personnel should be noted.

Upon completion of a survey, the last weekly report shall be marked "Final Report". The last report for surveys that are to be suspended for a considerable length of time shall be marked "Deferred Report".

One copy of the above report is to be submitted to the Division Engineer and one copy to the Construction Engineer at Salem.

### Article 9—Weekly Report for Construction Projects (Form No. E-1)

A report shall be prepared each Saturday to cover the preceding week, on Form No. E-1, "Field Engineer's Weekly Report for Construction Projects Only". These reports are to be mailed so that the Salem office will receive one copy by the Monday morning following. Be sure to give accurate estimates of:

Date of completion.
Per cent of time elapsed.
Per cent of contract completed.
Engineering cost to date.

Indicate the progress of the contractor and any special instruction which you have given during the week. Indicate the progress of the engineering party and any changes in personnel. Fill in the information requested on back of form. Mail one copy direct to the Division Engineer in charge and one copy to the Construction Engineer at Salem.

### Article 10—Reports to be Made by Street Inspector

It is the duty of the street inspector to make out the following report:

(a) Concrete Paving Inspector's Daily Report, Form No. E-81 (Section 13, Article 49).

This form is to be made out at the end of each day's work. Be sure to get the contractor or his representative to sign in the proper place for the amount of cement used.

### Article 11—Reporting of Quantities of Materials Used on Federal Aid Projects

Compliance with Federal requirements makes it necessary, at the completion of each Federal Aid contract, to provide the Public Roads Administration with a statement showing the quantities of certain kinds of materials used by the contractor in the performance of the work.

The quantities are to be obtained by the Resident Engineer from the contractor, or from other sources, and are to be listed by him on P.R.A. Form No. 47. The form is to be made up in such number of copies that five copies may be sent to the Office Engineer at Salem. The Office Engineer will attend to the forwarding of the information to the P.R.A.

Instructions for the filling out of the form are given on the back of the form. It will be noted in the instructions that certain items of the information called for by the form are to be filled in later at the P.R.A. office and are not to be filled in by the Resident Engineer. In addition to that, the Resident Engineer need not fill in any information in the part of the form which applies to "Employment". That information will be added at the Salem Office.

The following tables will be of assistance in the computation of the quantities of cement, aggregates and steel furnished in the form of concrete pipe. The weights for different sizes and gauges of corrugated iron pipe are also given in the tables.

The form referred to is to be submitted to the Office Engineer at about the time the work covered by the contract is being completed. It should be in Salem not later than a week or ten days after the project is completed.

The reports are not required for projects on which the Federal government is not cooperating:

## QUANTITY CONVERSION TABLE TO BE USED IN PREPARING REPORTS ON FORM PR 47

Gives approximate quantities of materials in concrete and corrugated iron pipes

### I. CONCRETE PIPE

STANDARD STRENGTH

| Pipe Size | Shell Thickness | Approx. Quantities Per Foot: Cement Bbls. | Aggregates C. Y. | Reinf. Steel Lbs. |
|---|---|---|---|---|
| 12″ | 2 ″ | .036 | .029 | ..... |
| 15″ | 2¼″ | .049 | .041 | 1.69 |
| 18″ | 2½″ | .065 | .054 | 2.55 |
| 24″ | 3 ″ | .103 | .085 | 4.81 |
| 30″ | 3½″ | .149 | .123 | 6.26 |
| 36″ | 4 ″ | .204 | .168 | 7.83 |
| 42″ | 4½″ | .267 | .220 | 10.35 |
| 48″ | 5 ″ | .338 | .278 | 14.62 |

EXTRA STRENGTH

| Pipe Size | Shell Thickness | Approx. Quantities Per Foot: Cement Bbls. | Aggregates C. Y. | Reinf. Steel Lbs. |
|---|---|---|---|---|
| ..... | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | ..... | ..... |
| 18″ | 2½″ | .065 | .054 | 4.38 |
| 24″ | 3 ″ | .103 | .085 | 8.41 |
| 30″ | 3½″ | .149 | .123 | 10.14 |
| 36″ | 4 ″ | .204 | .168 | 14.60 |
| 42″ | 4½″ | .267 | .220 | 19.87 |
| 48″ | 5 ″ | .338 | .278 | 25.94 |

## II. CONCRETE SEWER PIPE

| Pipe Size | Shell Thickness | Approx. Quantities Per Foot: Cement Bbls. | Approx. Quantities Per Foot: Aggregates C. Y. |
|---|---|---|---|
| 3″ | ½″ | .002 | .002 |
| 4″ | ⅝″ | .004 | .003 |
| 6″ | ¾″ | .006 | .005 |
| 8″ | ⅞″ | .010 | .008 |
| 10″ | 1″ | .014 | .012 |
| 12″ | 1¼″ | .021 | .017 |
| 15″ | 1½″ | .032 | .026 |
| 18″ | 1¾″ | .044 | .036 |
| 21″ | 2 ″ | .059 | .048 |
| 24″ | 2¼″ | .075 | .062 |

## III. CORRUGATED IRON PIPE

| Pipe Size | Gauge Number | Weight in Lbs. Per Foot |
|---|---|---|
| 8″ | 16 | 7.4 |
| 9″ | 16 | 8.3 |
| 10″ | 16 | 9.2 |
| 12″ | 16 | 10.8 |
| 15″ | 16 | 13.1 |
| 18″ | 16 | 15.7 |
| 21″ | 16 | 18.4 |
| 24″ | 14 | 25.4 |
| 30″ | 14 | 31.9 |
| 36″ | 12 | 52.0 |
| 42″ | 12 | 60.6 |
| 48″ | 12 | 70.6 |
| 54″ | 12 | 79.0 |
| 60″ | 10 | 109.1 |
| 66″ | 10 | 119.7 |
| 72″ | 10 | 130.2 |
| 78″ | 8 | 176.5 |
| 84″ | 8 | 189.6 |

NOTE: The above tables, on concrete pipe, giving quantities of cement and aggregates per lineal foot of pipe were based on the assumption that one cubic yard of concrete contains 1.58 bbls. of cement and 1.3 cu. yds. of aggregates. The standard strength pipe is a combination of Tables 14 and 15 shown on page 114 of Standard Specifications, issue of September 15, 1940. The weight of steel was computed on the basis of one foot of one inch square reinforcing steel weighing 3.4 lbs. per foot. The sizes, gauges and weights of corrugated iron pipe were taken from the Oregon Culvert and Pipe Company's List No. P-5.

## Article 12—List of Forms

| Form No. | Form Name | Number of copies of form to be submitted to the Division Engineer | Instructions Sec. and Art. |
|---|---|---|---|
| | CONSTRUCTION FORMS | | |
| A-107 | Authority for Additional Expenditures | 3 | 14–3, 5 |
| E-81 | Concrete Paving Inspectors Daily Report | * | 13–49 |
| E-1 | Field Engineers Weekly Report for Construction projects only | † | 17–9 |
| A-144 | Monthly Estimate— | | |
| | State projects | 3 | ..... |
| | F. A. projects | 4 | 17–4 |
| | Final— | | |
| | State projects | 4 | ..... |
| | F. A. projects | 5 | ..... |
| E-233 | Notification of Commencement and Completion of Work | † | 13–5 |
| E-208 | Order for Extra Work | 6 | 14–3 |
| A-105 | Order for State Force Work | 6 | 14–4 |
| A-169 | Price Agreement | 6 | 14–2 |
| 42-A | Quantity Summary Sheet— | | |
| | State projects | 4 | ..... |
| | F. A. projects | 4 | ..... |
| | Final— | | |
| | State projects | 4 | 17–5 |
| | F. A. projects | 4 | ..... |
| Mimeo. | Request for Extension of Contract Time | 3 | 13–15 |
| A-100 | Record of Extra Work Bills | 4 | 14–3 |
| A-139 | Record of Project Expenditure Authorizations | † | 14–8 |
| A-87 | Request for Transfer or Correction of Cost Distribution | 2 | 16–36 |
| PRA 47 | Report of Quantities of Materials Used on F. A. projects | 6 | 17–12 |
| E-71 | Sample Data Sheet | * | 15–4 |
| E-76 | Sample Data Sheet (Bituminous Mixture) | * | 15–4 |
| PRA 176 | Transcript of Contractor's Pay Roll (Form to be furnished by contractor) | † | 13–6 |
| Mimeo. | Construction Engineer's Statement | 2 | 17–6 |
| 87 FF | Daily Plant Report—Bituminous Mixtures | * | 13–45 |
| | EQUIPMENT AND SUPPLY FORMS | | |
| T-36 | Drivers' Preliminary Report (Insurance Company Form) | † | 1–17 |
| A-11 | Department Invoice | † | 16–29 |
| A-29 | Equipment Transfer Report | * | 16–5 |
| A-85 | Equipment Rental Report | * | 16–35 |
| A-16 | Field Emergency Purchase Requisition | † | 16–26 |
| A-81 | Gas, Oil and Grease Ticket—Shop Pump | † | 16–21 |
| A-15 | Gas, Oil and Grease Ticket—Maintenance Pump | † | 16–21 |
| A-173 | Memorandum Receipt | † | 16–27 |
| A-34 | Purchase Requisition | 3 | 16–4 |
| A-36 | Purchase Order—State Board of Control | † | 16–28 |
| A-39 | Partial Shipment Receiving Record | † | 16–28 |
| T-224 | Report of Accident (Insurance Company) | † | 1–17 |
| A-182 | Request for Relief of Property Lost, Stolen, for Sale or Exchange | 4 | 16–10 |
| A-87 | Request for Transfer or Correction of Cost Distribution | 2 | 16–36 |
| A-33 | Storeroom Requisition | † | 16–4 |
| A-22 | State Highway Fund Claim | 1 | 16–30 |

| Form No. | Form Name | Number of copies of form to be submitted to the Division Engineer | Instructions Sec. and Art. |
|---|---|---|---|
| OD-32 | Traffic Accident Report—Department of State | † | 1–17 |
| A-49 | Transfer of Property | * | 16–6 |
| Mimeo. | Tire Application Form | † | 16–31 |
| A-101 | Tire Shipping Tag | † | 16–31 |
| A-98 | Tire Mileage Card | † | 16–31 |
| | **PAY ROLLS AND ABSENCES** | | |
| A-80 | Acknowledgment of Receipt of Time Check | † | 2–10 |
| A-94 | Acknowledgment of Receipt of Pay Check | † | 2–14 |
| A-51 | Pay Roll | 3 | 2–3 |
| A-219 | Physician Certificate | 1 | 2–2 |
| A-220 | Report of Exchange Time Worked | 2 | 2–2 |
| A-57 | Record of Time Checks Issued | † | 2–11 |
| A-58 | Statement of Absent Time | 2 | 2–5 |
| 507 | Signature Certification | † | 2–8(d) |
| A-198 | Time Statement | † | 2–8 |
| A-57 | Time Statement Register | † | 2–12 |
| | **PERSONNEL FORMS** | | |
| 20 | Accident Claim—S. I. A. C. | † | 3–7 |
| E-5 | Application and Employment Record | † | 4–2 |
| W-4 | Dependency Status Report (Inter. Revenue) | † | 2–7 |
| A-23 | Expense Statement | 3 | 1–18 |
| A-90 | Notice of Transfer of Employees | † | 4–4 |
| E-245 | Notice of Termination of Employment | † | 4–4 |
| E-219 | Record of Employment | † | 4–1, 3 |
| A-201 | Tax Exemption Certificate | † | 1–18 |
| A-60 | Wage Rate Approval | 3 | 4–5 |

| Form No. | Form Name | Number of copies of form to be submitted to the Division Engineer | Instructions Sec. and Art. |
|---|---|---|---|
| | **RIGHT OF WAY FORMS** | | |
| Mimeo. | Locating Engineers Right of Way Report | 2 | 9–12 |
| E-29 | Original Authorization for Negotiation | 2 | 9–15 |
| Mimeo. | Report on Proposed Abandonment of Highway Right of Way | 2 | 9–18 |
| E-31 | Right of Way Descriptions—Metes and Bounds | 2 | 9–13 |
| E-151 | Right of Way Description—Center Line | 2 | 9–13 |
| E-47 | Statement of Information | 2 | 9–4 |
| | **SURVEY FORMS** | | |
| E-39 | Authority for Surveys | 3 | 5–1 |
| 61 | Bridge Construction Survey Data | 1 | 11–11 |
| E-114 | Field Engineers' Weekly Report for Surveys | † | 17–8 |
| A-87 | Request for Transfer or Correction of Cost Distribution | 2 | 16–36 |
| E-71 | Sample Data Sheet | * | 15–4 |
| 525 | Statement of Material Sources and Stockpile Sites | 4 | 15–10 |
| E-38 | Traverse Sheets (coordinates) | † | 11–4 |
| Mimeo. | Report on Bench Mark Recoveries | 3 | 5–31 |
| Mimeo. | Locating Engineer's Statement | 2 | 5–45 |
| E-185 | Description of Bench Mark | 1 | 5–31 |
| E-186 | Report on Condition of Bench Marks | 1 | 5–31 |

* See Instructions printed on the form.
† See Instructions in this manual.

| | Sheet 1 of 1 Sheets<br>STATION TO STATION | | 1.<br>Clearing & Grubbing<br>All | 2.<br>Trench Exc. (Unclassif.)<br>Cu Yd | 3.<br>Structural Exc. (Unclassif.)<br>Cu. Yd. | 4.<br>General Exc. (Unclassif.)<br>Cu. Yd. | 5.<br>Short Overhaul<br>Yd. Sta. | 6<br>Long Overhaul<br>C-Yd. Sta. | 7<br>Finishing Roadbed & Slopes<br>Mile | 8.<br>Rounding Cutbanks<br>Lin. Ft. | 9<br>18" Concrete Pipe<br>Lin. Ft. | 10.<br>36" Concrete Pipe<br>Lin. Ft. | 11.<br>Selected Roadbed Topping<br>Cu. Yd. | 12.<br>Hauling Roadbed Topping<br>Yd. Mi. | | FA #1<br>6" Drain Tile<br>Lin. Ft. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0+00 | 331+05.6 | 95% | | | | | | | | | | | | | 1 |
| 2 | 8+40 | 13+75 | | | | 2560 | 4500 | 1000 | | | | | | | | 2 |
| 3 | 20+50 | 31+25 | | | | 3180 | 6000 | 1500 | | | | | | | | 3 |
| 4 | 104+00 | 110+30 | | | | 1370 | 3600 | 750 | | | | | | | | 4 |
| 5 | 118+20 | 125+70 | | | | 864 | 1500 | 200 | | | | | | | | 5 |
| 6 | 201+35 | 206+00 | | | | 2100 | 600 | 1300 | | | | | | | | 6 |
| 7 | 213+25 | 218+25 | | | | 1800 | 5400 | 900 | | | | | | | | 7 |
| 8 | 315+00 | 321+00 | | | | 1400 | 4200 | 650 | | | | | | | | 8 |
| 9 | 327+00 | 330+20 | | | | 1900 | 6700 | 860 | | | | | | | | 9 |
| 10 | 6+20 | | | 20 | 18 | | | | | | 78 | | | | | 10 |
| 11 | 42+00 | | | 27 | 31 | | | | | | | 69 | | | | 11 |
| 12 | 325+10 | | | 18 | 11 | | | | | | | 105 | | | | 12 |
| 13 | 0+00 | 26+00 | | | | | | | | | | | 1800 | 2400 | | 13 |
| 14 | 9+00 | 12+00 | | | | | | | | 300 | | | | | | 14 |
| 15 | 208+00 | | | | | | | | | | | | | | 103 | 15 |
| 16 | 18+20 | | | | | | | | | | | | | | | 16 |
| 17 | | | | | | | | | | | | | | | | 17 |
| 18 | | | | | | | | | | | | | | | | 18 |
| 19 | | | | | | | | | | | | | | | | 19 |
| 20 | | | | | | | | | | | | | | | | 20 |
| 21 | | | | | | | | | | | | | | | | 21 |
| 22 | | | | | | | | | | | | | | | | 22 |
| 23 | | | | | | | | | | | | | | | | 23 |
| 24 | | | | | | | | | | | | | | | | 24 |
| 25 | | | | | | | | | | | | | | | | 25 |
| 26 | | | | | | | | | | | | | | | | 26 |
| 27 | | | | | | | | | | | | | | | | 27 |
| 28 | | | | | | | | | | | | | | | | 28 |
| 29 | | | | | | | | | | | | | | | | 29 |
| 30 | | | | | | | | | | | | | | | | 30 |
| 31 | | | | | | | | | | | | | | | | 31 |
| 32 | | | | | | | | | | | | | | | | 32 |
| 33 | | | | | | | | | | | | | | | | 33 |
| 34 | | | | | | | | | | | | | | | | 34 |
| 35 | | | | | | | | | | | | | | | | 35 |
| 36 | | | | | | | | | | | | | | | | 36 |
| 37 | | | | | | | | | | | | | | | | 37 |
| 38 | | | | | | | | | | | | | | | | 38 |
| 39 | | | | | | | | | | | | | | | | 39 |
| 40 | | | | | | | | | | | | | | | | 40 |
| | Total Quantities to Date | | 45% | 65 | 60 | 15,174 | 32,500 | 7,160 | 0 | 300 | 78 | 174 | 1800 | 2400 | 103 | |
| | Quantities Previously Estimated | | 50% | 27 | 31 | 3,465 | 6,210 | 1,400 | 0 | 0 | 0 | 69 | 0 | 0 | 0 | |
| | Quantities Handled Since Last Estimate | | 45% | 38 | 29 | 11,709 | 26,290 | 5,760 | 0 | 300 | 78 | 105 | 1800 | 2400 | 103 | |

| No. | EWO #1 Salvaging Culvert Pipe Lin. Ft | | | | | | NAME OF SUBCONTRACTOR OR OTHER PARTY PERFORMING WORK |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | A.B. Johnson |
| 11 | | | | | | | A.B. Johnson |
| 12 | | | | | | | A.B. Johnson |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | 36 | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |
| 21 | | | | | | | |
| 22 | | | | | | | |
| 23 | | | | | | | |
| 24 | | | | | | | |
| 25 | | | | | | | |
| 26 | | | | | | | |
| 27 | | | | | | | |
| [redacted] | | | | | | | |
| 29 | | | | | | | |
| [redacted] | | | | | | | |
| 31 | | | | | | | |
| 32 | | | | | | | |
| 33 | | | | | | | |
| 34 | | | | | | | |
| 35 | | | | | | | |
| 36 | | | | | | | |
| 37 | | | | | | | |
| 38 | | | | | | | |
| 39 | | | | | | | |
| 40 | | | | | | | |
| | 36 | | | | | | |
| | 0 | | | | | | |
| | 36 | | | | | | |
| | | | | | | | |

**STATEMENT OF DEDUCTION ITEMS**

| ITEM | Unit | Unit Price | Total Quantities Furnished to Date | Quantities Previously Furnished | Quantities Furnished Since Last Estimate | Prefix and Account Number to Which Originally Charged |
|---|---|---|---|---|---|---|
| (SFO) Purshase | | | | | | |
| 36" Corr. Metal Pipe | Lin. Ft | 6.00 | 30 | — | 30 | 10-1108-202 |

**STATEMENT OF CONSTRUCTION MATERIALS ON HAND**

| ITEM | Unit | Allowable Unit Price | Quantity | Amount |
|---|---|---|---|---|
| 18" Concrete Pipe | Lin. Ft | 2.70 | 36 | 97.20 |
| Total | | | | 97.20 |

Form A-144—5M—1-42

OREGON
STATE HIGHWAY COMMISSION
SALEM, OREGON

# MONTHLY ESTIMATE

Contract No. 2100 Estimate No. 2

Job Prefix No. 10-1108

Fed. Aid Proj. No. ............

Work done to June 10, 1945

Kind of work Grading & Tapping (Grading, Surfacing, Paving)

Section Bear Creek - Deer Creek

Highway Pacific

County Jackson

Contractor A. Smith & Son

Work begun May 1, 1945

Work completed ............, 19....

Correct O. B. Samson [signature] Resident Engineer

Approved ............

## INSTRUCTIONS

*Submission of Estimates:*

Monthly estimates shall be prepared and submitted upon dates established by the Office Engineer for each particular job. The number of copies to be prepared shall be five when the work is Federal Aid work, and four for all other work. The Resident Engineer shall retain one copy, forwarding all other copies to the Division Office. The Division Office will retain one copy, forwarding the remaining copies to the Salem Office. One copy will be retained by the Salem Office, one forwarded to the contractor and, on Federal Aid Projects, one forwarded to the Office of Public Roads. In cases where the Division Engineer has his headquarters in Salem, the copy for the Division Engineer's Office may be omitted.

Copies of Monthly Estimates furnished contractors will not be considered official unless submitted through the Division and Salem Offices

*Preparation of Estimates:*

Show quantities in detail; split the work up into units which will be readily recognized by the Division Engineer and contractor to enable them to check up the estimate in a general way to see that all work done is included. List each culvert by itself, showing the excavation, pipe, concrete, steel, etc., entering into its construction. Show clearing and grubbing as a percentage of the total amount for the job. For this one item, do not split your work into sections, as payment must be made as a percentage of the whole. Head columns clearly listing items in the order in which they are shown in the contract using the item names exactly as given therein. State sizes and give units of measurement. Mark decimal points distinctly. List all subcontractors in the last column.

Quantities to be shown on estimates are total quantities to the date of the estimate, not simply the quantities moved since the last previous estimate

*Allowances for Material on Hand:*

The contractor will be allowed payment upon materials delivered upon the work, and as a basis for such payment the Resident Engineer will show in the place provided on the estimate form the amounts of materials actually on hand at the date of the estimate. Only non-perishable materials entering into construction, which materials have been purchased direct by the contractor, shall be listed. Fuel, equipment, contractor's supplies and materials of similar nature should not be included. Neither should materials furnished to the contractor by the State or County.

List on each estimate the quantities actually on hand at the date of the estimate, and not yet incorporated in the work, regardless of any previous estimates. These quantities are not cumulative and have no relation to each other from month to month.

Advances on materials are intended to cover only the larger items, and Resident Engineers should not list materials on hand unless they represent a value of at least $500.

In estimating the unit prices to be applied to the various items allow 90 per cent of the unit cost to the contractor; provided, however, that on items on which there is a bid unit price, or materials which the State offered to furnish at a guaranteed price, the contractor shall not be allowed more than 90 per cent of such unit price or guaranteed price, regardless of the cost to him.

*Statement of Deduction Items:*

If any labor, materials, or equipment is furnished to the contractor through the Resident Engineer's Office, or any freight charges are paid by the State, the Resident Engineer will list the items in the space headed "Statement of Deduction Items" on his estimate sheets, and the deductions will be made from the payments to the contractor in the Salem Office.

STATE PRINTING DEPT.

Form 42A—5M -6-39

# OREGON STATE HIGHWAY DEPARTMENT—QUANTITY SUMMARY SHEET

Section Bear Creek - Deer Creek  Contract No. 2100  Estimate No. 2  Job Prefix No. 10-1108  Work done to June 10, 1945

Kind of work Grading & Topping  Highway Pacific  Specified date of completion Aug. 30, 1945

Contractor A. Smith & Son  County Jackson  Estimated date of completion Aug. 30, 1945

| Item | Unit | Unit Price | Original Authorization Quantity | Original Authorization Amount | Estimate Corrected to Date Quantity | Estimate Corrected to Date Amount | Performed to Date Quantity | Performed to Date Amount | To Complete Project Quantity | To Complete Project Amount | Performed Since Last Estimate Quantity | Performed Since Last Estimate Amount |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Clearing & Grubbing | Lump Sum | | All Spec. | $ 3000 00 | All Spec. | $ 3000 00 | 95% | $ 2,850 00 | 5% | $ 150 00 | 45% | $ 1,350 00 |
| 2. Trench Excavation, Unclassif. | cu. Yd. | 2.00 | 150 | 300 00 | 150 | 300 00 | 65 | 130 00 | 85 | 170 00 | 38 | 76 00 |
| 3. Structural Exc., " | " " | 2.40 | 100 | 240 00 | 100 | 240 00 | 60 | 144 00 | 40 | 96 00 | 29 | 69 60 |
| 4. General Exc., Unclassified | " " | 0.42 | 56,000 | 23,520 00 | 56,000 | 23,520 00 | 15,174 | 6,373 08 | 40,826 | 17,146 92 | 11,709 | 4917 78 |
| 5. Short Overhaul | Yd. Sta. | 0.02 | 168,000 | 3,360 00 | 168,000 | 3,360 00 | 32,500 | 650 00 | 135,500 | 2,710 00 | 26,290 | 525 80 |
| 6. Long Overhaul | C-Yd Sta | 0.30 | 24,000 | 7,200 00 | 24,000 | 7,200 00 | 7,160 | 2,148 00 | 16,840 | 5,052 00 | 5,760 | 1,728 00 |
| 7. Finishing Roadbed & Slopes | Mile | 100.00 | 6.27 | 627 00 | 6.27 | 627 00 | -- | -- | 6.27 | 627 00 | -- | -- |
| 8. Rounding Cut banks | Lin. Ft. | 0.10 | 4,800 | 480 00 | 5,100 | 510 00 | 300 | 30 00 | 4,800 | 480 00 | 300 | 30 00 |
| 9. 18" Concrete Pipe | " " | 3.00 | 390 | 1,170 00 | 360 | 1,080 00 | 78 | 234 00 | 282 | 846 00 | 78 | 234 00 |
| 10. 36" Concrete Pipe | " " | 8.00 | 168 | 1,344 00 | 174 | 1,392 00 | 174 | 1,392 00 | -- | -- | 105 | 840 00 |
| 11. Selected Roadbed Topping | Cu. Yd. | 1.10 | 21,000 | 23,100 00 | 21,000 | 23,100 00 | 1,800 | 1,980 00 | 19,200 | 21,120 00 | 1,800 | 1,980 00 |
| 12. Hauling Roadbed Topping | Yd. Mi. | 0.12 | 56,000 | 6,720 00 | 56,000 | 6,720 00 | 2,400 | 288 00 | 53,600 | 6,432 00 | 2,400 | 288 00 |
| (Subtotal, Contract Bid Items) | | | | $ 71,061 00 | | $ 71,049 00 | | $ 16,219 08 | | $ 54,829 92 | | $ 12,039 18 |
| P.A. #1, - 6" Drain Tile | Lin. Ft. | 0.80 | | | 103 | 82 40 | 103 | 82 40 | -- | -- | 103 | 82 40 |
| E.W.O. #1, - Salvaging Culv. Pipe | | | | | 36 | 43 20 | 36 | 43 20 | -- | -- | 36 | 43 20 |
| Hand Sloping Slide Area (E.W.O. Not Yet Submitted) | | | | | | 226 00 | | -- | | 226 00 | -- | -- |
| State Force Order - Fencing Topping Pit | | | | | | 150 00 | | -- | | 150 00 | -- | -- |
| Other Contingencies Anticipated | | | | | | 600 00 | | -- | | 600 00 | -- | -- |
| S.E.O. (Act. #202) 36" C.M. Pipe (To be deducted) | | | | | | -- | | -- | | -- | (Minus) | 180 00 |
| (Subtotal) | | | | | | $ 72,150 60 | | $ 16,344 68 | | $ 55,805 92 | | $ 11,984 18 |
| Contingencies | | | | 2,842 44 | | 1,740 84 | | -- | | 1,740 84 | | |
| Engineering | | | | 4,263 66 | | 4,263 66 | | 1,330 00 | | 2,933 66 | | |
| Totals | | | | $ 78,167 10 | | $ 78,155 10 | | $ 17,674 68 | | $ 60,480 42 | | $ 11,984 18 |

Total authorizations approved to date, $ 78,442.70

**INSTRUCTIONS**—Include in "Estimate Corrected to Date" absolutely every item of cost that it is possible to anticipate, including extra work and state force work, and, for the purpose of this report, estimate all quantities liberally, so that the actual final cost will be less, rather than more than the cost shown hereon. List under the heading "Performed Since Last Estimate" all work to be paid for on the current estimate. Do not include "Materials on Hand" on this form.

....., Engineer in Charge

STATE PRINTING DEPT.

Form E-116—SM 7-44

OREGON STATE HIGHWAY DEPARTMENT

## FIELD ENGINEER'S WEEKLY REPORT FOR SURVEYS ONLY

Date Dec. 31, 1944

Job name: Bear Creek Section — Week from: Dec. 24 to Dec. 31

Mail address: Roseburg

Highway: Dappua — Telegraph or telephone address: Roseburg

County: Douglas — Job Prefix 10-1497 — Express and freight address: Roseburg

*General information covering progress of work by party and important developments, instructions from Division Engineer, changes in personnel of party, etc.:*

The transit party has completed the located line to station 1170 and the levels and topography are complete to station 1180. All right of way stakes, section ties and referencing has been kept up to date. As the party now has to walk five miles to work, it will take most of the coming week to finish the "L" line.

Weather conditions have been fair for this time of the year, with rains and occasional snow, but not enough to seriously interfere with the work.

The office work has progressed steadily. The location cross sections are plotted to station 970. Quantities are balanced to station 960. The profile is up to date with the field work. Both the 100 foot and the 400 foot maps are up to date. The 400 foot tracing is 60 % complete.

The LK revision is nearly complete and will be mailed to Salem the first of next week.

Transferred Bill Brown and Sam Jones, chainmen, to E. B. Black at at Reedsport on Wed. the 27th.

Signed E. O. Brown

Title Locating Engineer

USE BACK IF ADDITIONAL SPACE IS REQUIRED

(Back of form E 114)

| Day of Week | WEATHER CONDITIONS A. M. | P. M. |
|---|---|---|
| Sunday | snow flurries | |
| Monday | rain and snow | |
| Tuesday | clear | |
| Wednesday | cloudy | |
| Thursday | unsettled | |
| Friday | rain and snow | |
| Saturday | snow | |

INSTRUCTIONS

This form is required to be submitted by all Locating Resident Engineers. Separate reports must be submitted for each job, and no single report shall cover more than one job.

Reports shall be mailed by not later than Sunday night. The original copy shall be mailed direct to the Salem office and the duplicate direct to the Division Engineer. The triplicate copy shall be retained in the Field Engineer's files.

DO NOT include in weekly reports matters requiring action by, or the special attention of, Division Engineers or others, unless these matters are also taken up by a letter addressed to the attention of the party interested. Requisition for supplies, calls for men, requests for information, and all matters requiring immediate action or reply will NOT receive attention, if made on this form.

Fill out those sections of the above detailed reports which apply to the particular class of work involved under the job covered by the report.

*SURVEYS*

| | |
|---|---|
| Total mileage of section to be surveyed | 11.5 |
| Miles of preliminary staked | 18.7 |
| Miles of location staked | 10.9 |
| Per cent of field work complete | 90 |
| Per cent of office work complete | 70 |
| Number of days worked on this project | 78 |
| Number of men in party | 18 |
| Salary expense this week | $500.00 |
| All other expenses this week | $25.00 |
| Previous total expenditures this survey | $6,300.00 |
| Total expenditures including this week | $6,825.00 |
| Survey will be completed about | Feb. 15, 1945 |
| Completed survey will cost about | $8,000.00 |
| Per mile cost of survey will be about | $700.00 |

STATE PRINTING DEPT

Form E 1—SM—6 44

OREGON STATE HIGHWAY COMMISSION

## FIELD ENGINEER'S WEEKLY REPORT FOR CONSTRUCTION PROJECTS ONLY

For Week Ending July 28, 19 45

Section: Deer Creek – Bear Creek — Kind of work: Grading & Bit. Macadam Surfacing

Highway: Pacific — Section prefix: 17-1109

Contractor: A & B Construction Co. — Contract number: 2883

Date of contract: May 15, 1945 — Date of completion: July 31, 1946

Date work started: May 21, 1945 — Estimated date of completion: July 21, 1946

Amount of contract: $ 901,501.00 — Per cent of time elapsed: 16.74 %

Estimated cost of completed project, exclusive of engineering: $842,721.04

Per cent of contract completed, based on total contract price: 12.8 %

Engineering cost to date, $ 4,039.00 — 0.67 % — Date project was completed: , 19

*General information covering progress of work by party and by contractor, important development, instructions to contractors, instructions from Division Engineers, exchanges in personnel of party, etc.:*

Cats and scrapers worked all week in the cut between stations 237 and 244+50. The contractor has four scrapers working and has made very good progress.

A small slide developed in this cut, breaking back of the slope line approximately 10 feet and about one half way down the cut slope. Bulldozer opening up the cut at stations 320 to 330.

Culvert crew installing culverts at stations 316 and 322.

Preparing footings and placing forms for floor slab in the box culvert at station 298+66. Drilling for culvert at station 365+78.

Party set slope stakes from station 305 to 314 and from 320 to 333.

Signed (signed) John Doe

Address Grants Pass, Ore.

Mail original copy to Salem and duplicate copy to Division Engineer on Saturday of each week, retain triplicate copy for your own file

(Back of form E 1)

| | GRADING | SURFACING | MAINTENANCE MATERIALS | OIL AND BITUMINOUS MACADAM | PAVING |
|---|---|---|---|---|---|
| Miles in project | 5.38 | 5.38 | —— | 5.38 | |
| Miles partially completed | 1.27 | none | —— | none | |
| Miles completed | none | none | —— | none | |
| Total estimated quantities | 863,000 | 32,500 | 1,400 | 7,500 c.y. 520 tons | |
| Estimated quantities moved or placed to date | 93,000 | none | none | none | |
| Average daily quantities | 4,000 | none | none | none | |
| Average daily quantities necessary to complete project on time | 5,265 | 106 | 4 | 25 c.y. 2 tons | |
| Number shifts per day | 2 | —— | —— | —— | |
| Hours per shift | 8 | —— | —— | —— | |
| Average force on project for week | 40 | —— | —— | —— | |

Percentages of men employed on contract to be secured from:

County, —%; County, —%; County, —%; County, —%

| | NUMBER USED AND SECURED FROM: COUNTY | COUNTY | COUNTY | COUNTY | OTHER SOURCES | CONTRACTOR'S KEY MEN, ETC. | TOTAL |
|---|---|---|---|---|---|---|---|
| Men | | | | | | | |
| Men and teams | | | | | | | |
| Men and trucks under 3 tons | | | | | | | |
| Men and trucks over 3 tons | | | | | | | |
| Men and tractors | | | | | | | |

Equipment used during week: Shovels 1, Power graders 1, Rollers —, Mixers —, Crushing or screening plants —, Compressors 2, Bulldozers 3, Sheet-foot rollers 1, Cat & Scrapers 4

| | WEATHER | HRS. DELAY | CAUSE OF DELAY |
|---|---|---|---|
| Sunday | clear & warm | | |
| Monday | " | | |
| Tuesday | " | | |
| Wednesday | " | | |
| Thursday | " | | |
| Friday | " | | |
| Saturday | " | | |

CONSTRUCTION ENGINEER'S STATEMENT
Submit 2 Copies with Final Estimate

Prefix 10-1108 Fed. Aid No. 21 A

Date Sept 29, 1944 Contract No. 2100

Name of Project Rock Creek, Coast Highway

1. Give dates contractor actually started work June 4 1944 Completed Work Aug. 2' 44

2. Has project been completed within station to station limits set up in the contract? yes

3. Have all important alignment points been permanently referenced? yes

4. Have all R/W negotiations been completed? yes. If not, give full report.

5. Have all R/W markers been set? yes. If not, give location and reason.

6. Is there any encroachment on the R/W (exact power & Telephone lines? none Give locations.

7. Does the road or R/W encroach on anyone's property? no. Give locations.

8. Has all old R/W been definitely disposed of? yes.

9. Has the supporting data for all quantities been included in your final report and estimate? yes.

10. Has the final 100' = 1" constructed line map been prepared & submitted? yes

11. List field engineering, notes, records & data on hand which you are not sending in along with your final estimate. Do not include weekly reports & correspondence.)

12. Do you expect the contractor to file any additional claims? yes. If so, make detailed report. see attached report

13. State approximately the amount of material still available at each quarry ---
gravel pit 100 talus deposit ----- c.y.

14. Remark briefly as to suitability of material source for future operations Pit exhausted.

15. Have you reported stockpile distribution to the D.M.S.? If not, furnish him with complete tabulation, together with cost of materials at each site.

16. Have you submitted your Bench Mark report in accordance with Circular Letter #192? no.

17. Have you notified the Sign Department and staked the location for the installation of the Federal Aid Marker Posts, if required? yes

18. Have you determined the exact quantity, and submitted supporting data, together with price agreement covering the purchase of excess asphalt, aggregates, cement adjustment, or any other surplus items which would be of value for future maintenance and which the contractor agrees to sell at cost only? none.

19. Have all right of way agreements as indicated on the options been completed to the satisfaction of the grantor? yes

Signed (s) John Doe
Resident Engineer.

Address

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